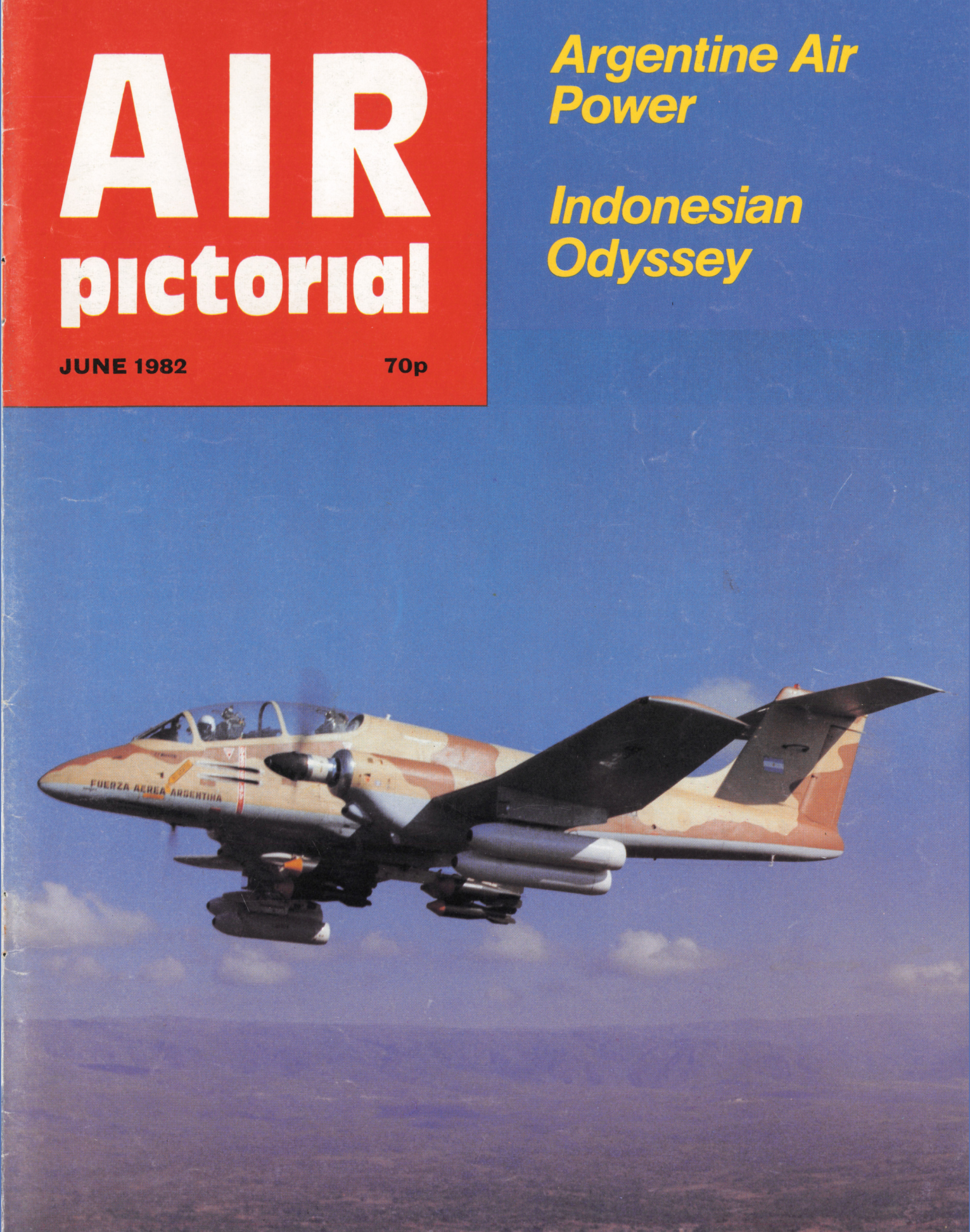
AIR pictorial

JUNE 1982 70p

Argentine Air Power

Indonesian Odyssey



A300B4-200 Airbus PK-GAA of Garuda Indonesian Airways landing at Kemayoran, Jakarta's domestic airport. On the ground are a Shorts Skyvan, Fokker Friendship and two Vickers Viscounts

VOLUME 44 No. 6 JUNE 1982

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FRONT COVER: Argentine Air Force FMA IA-58A Pucará, serial A-518, a type seen operating from Port Stanley airfield after the invasion on 2nd April

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AIR pictorial

What about me?

"HELLO, Gannet here. Can I speak to the Editor?"
Ed.: "Speaking. Who did you say you are?"
Gan.: "Gannet—Fairey—AEW.3—from the 'Ark'."
Ed.: "Oh, that Gannet.... Spotted any low-fliers recently?"
Gan.: "Same as usual, whenever they come our way. But that wasn't what I rang about. I've been reading in the papers about this new bird called AWACS, costing £55 million apiece, who's got the NATO landed gentry interested. But what about me?"

Gannet AEW.3 XL482 of "B" Flight, No. 849 Squadron

Ed.: "What about you?"
Gan.: "Well, I do much the same job, over the sea, and not just the patches around Europe but wherever the 'Fish-heads' decide me and my mates have to go. Could be the South Atlantic one week, Indian Ocean the next. You name it, we've probably been there.

"The point is, I'm due for retirement before long. Can't go on forever, you know. And no one has said a word about my successor."
Ed.: "Typical! *Ark Royal* goes on pension next year, too. Quite a problem. Still, we'll see if we can help."

So saying we replaced the receiver on our nautical "hot-line" and pondered. If it hadn't been for that misguided, mini-minded Mr. Healey—when he was Defence Minister, that is—the Navy wouldn't be in this mess. Fancy believing that Britain, of all countries, doesn't need aircraft-carriers! (Thinks: Mr. H. doesn't seem to be doing too well in his new job, either.)

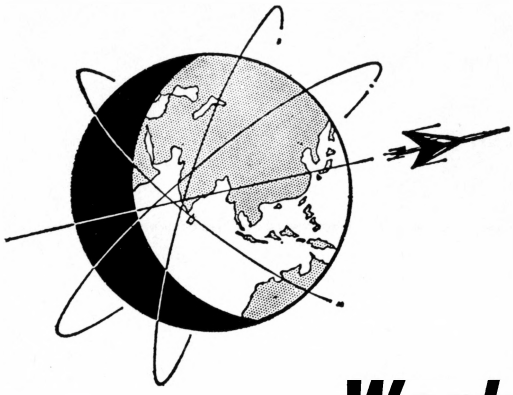
It has been a hard task getting some form of shipborne air-power back into the pipeline (two dozen Sea Harriers) and it has taken ten long years. And the ships they'll fly from ("Invincibles") won't be all that big hangar-wise. A "mix" of seventeen Sea Harriers and anti-submarine Sea Kings will be the norm. Add a third aircraft type (Gannet replacement) into an already small aircraft complement and the problem gets knottier.

The need is there, particularly as, with the advent of *Kiev*, the Russians have demonstrated that they can now launch low-level "under-radar" strike aircraft from anywhere on the world's oceans. The Royal Navy will be vulnerable unless it continues to have an airborne early warning system that it can take with it, wherever it goes.

★ ★ ★

FROM A professional point of view it must be admitted that the skill with which the Argentine Navy wrought such destruction on H.M.S. *Sheffield,* who in the absence of any AEW aircraft was acting as a radar picket on 4th May, was of a high order. Immediately in London M.P.s were asking "What went wrong?" and the BBC (just what does the first "B" stand for?) was bleating: "Is the Royal Navy on a hiding to nothing?"

The Royal Navy knows exactly what is wrong, and has done for years, but is constrained by inadequate funding and the misguided policies of Defence Ministers since 1965. We have nothing further to add to the above article which is reprinted from our January 1977 issue.



World Air News

British Airways' new divisions

BRITISH AIRWAYS have split their worldwide commercial activities into profit-centred operating divisions, which became effective on 1st May, in a drive for increased efficiency. To some extent the move is a reversion to the original BOAC and BEA which were merged to form BA.

The former Commercial Operations department has been replaced by three new and largely self-contained divisions, each with its own aircraft fleet: the Intercontinental Services Division and the European Services Division, both based at Heathrow, and the Gatwick Services Division. There is now also a U.K. and Ireland Sales and Cargo organisation, responsible for selling British Airways' passenger products in the British home market, and for all cargo and inclusive-tour activities in Britain.

The intention is to put greater emphasis on profitability by giving managers of each division increased freedom to plan and run the commercial activities for which they are responsible. British Airways will continue to trade under a single name and display a single image. Supporting technical and regulatory services will remain centralised.

Intercontinental Services Division is responsible for all long-haul scheduled services and has its own fleet of Concordes, Boeing 747s and long-range Lockheed TriStars. It has five subsidiary divisions: North Atlantic, Caribbean, Africa, Orient (sub-divided into North Asia and South Asia/Australasia) and Concorde Services.

European Services Division is responsible for all Continental and domestic scheduled services operating from Heathrow and its fleet consists of short-range scheduled-service TriStars, Boeing 737s, Hawker Siddeley Tridents, BAC One-Elevens and Hawker Siddeley HS 748s. Next year Boeing 757s will join its fleet. There are four subsidiary divisions: Manchester-originating services, Germany-based services, Shuttle services and Highlands services.

Gatwick Services Division is responsible for all mainline and charter services operated from Gatwick by both British Airways and British Airtours. Its fleet consists of TriStars, Boeing 737s and 707s.

The overall airline strategy will be approved by the Board of British Airways. Each division, with its own board of management, will produce a five-year plan for using the aircraft allotted to it and its own annual budget and profit and loss account.

First public appearance of a Panavia Tornado in operational squadron markings was at the R.F.C./R.N.A.S. reunion at R.A.F. Wyton on 13th April. The fin of Tornado GR.1 ZA588 "C", shown here, bears the green bat badge, outlined in yellow, of No. 9 Squadron which officially re-forms at Honington this month. Passing "through" the nose roundel is a yellow-outlined green arrowhead; coded letter "C" is in yellow (Photo: J. D. R. Rawlings)

First order for ATR 42

Ransome Airlines, the U.S. regional operator based at Philadelphia, have ordered six Aérospatiale/Aeritalia ATR 42s for delivery starting in November 1985. This is the first firm contract for the new Franco-Italian regional airliner which is expected to make its first flight in mid-1984. Powered by two 1,800-s.h.p. Pratt & Whitney PW100/2 turboprops, the ATR 42 is designed to carry 42–49 passengers.

Ransome Airlines serve eleven cities on the U.S. Eastern Seaboard and their fleet includes ten D.H. Canada Twin Otters and nine Nord 262s.

Fellowships for U.S.A.F.?

Fokker have teamed up with Lockheed Aircraft Service Co. of Ontario, California, to offer the Fokker F.28 Fellowship to meet the U.S.A.F.'s C-SAM (Special Air Mission) requirement for a business-jet type aircraft. C-SAM is a U.S.A.F. operation to transport Government officials and foreign dignitaries currently performed by a fleet of Lockheed C-140B JetStars.

Lockheed will be the prime contractor and it is proposed to use the Mk.3000 version of the Fellowship, suitably modified internally and with a different avionics fit.

New Transalls for French A.F.

On 1st April the first new-generation Transall C-160 transport for the French Air Force's *64e Escadre* was handed over at Evreux. It has been assigned to *ET 1/64* "Bearn", a unit which has long been operating the Nord Noratlas. Previously four Transall C-160NGs had been delivered to the *61e Escadre* at Orléans-Bricy.

The French A.F. has twenty-five of the new Transalls on order, all of which will be equipped for in-flight refuelling, while ten will also be able to operate as tankers. They will augment the original batch of forty-eight C-160Fs.

No. 9 Squadron, R.A.F.

On 29th April, writes J. D. R. Rawlings, No.9 Squadron held its disbandment parade at R.A.F. Waddington. The Squadron Standard was handed over to the keeping of the crews who will, in due course, form the new No. 9, the parade being led by W/Cdr. Peter Mayes, the squadron's C.O., and reviewed by Air Chief Marshal Sir Keith Williamson, A.O.C.-in-C., R.A.F. Strike Command. It was accompanied by a flypast by Lancaster, Canberra, Vulcan and Tornado aircraft, all types with which No. 9 has been, or will be, equipped.

The new No. 9 Squadron will re-form

at Honington on 1st June under the command of W/Cdr. Peter Gooding and will be the R.A.F.'s first operational Tornado GR.1 squadron. Already there are Tornadoes at Honington sporting No. 9's green bat on the fins in readiness.

According to an R.A.F. statement issued in April, the end of the Vulcan's operational life will be on 30th June when the last three squadrons at R.A.F. Waddington (Nos. 44, 50 and 101) will disband—although events in the Falklands may now alter this.

Friendships for Air North

Air North, the U.S. regional carrier based at Burlington, Vermont, started services with the first of a fleet of three Fokker F.27 Friendships on 25th April, operating a twice-daily schedule to Binghamton and Washington. The two other F.27s will provide services from Burlington to Boston and New York.

The new order, not previously announced, brings sales of the Friendship up to 742.

More C-12Ds for U.S. Army

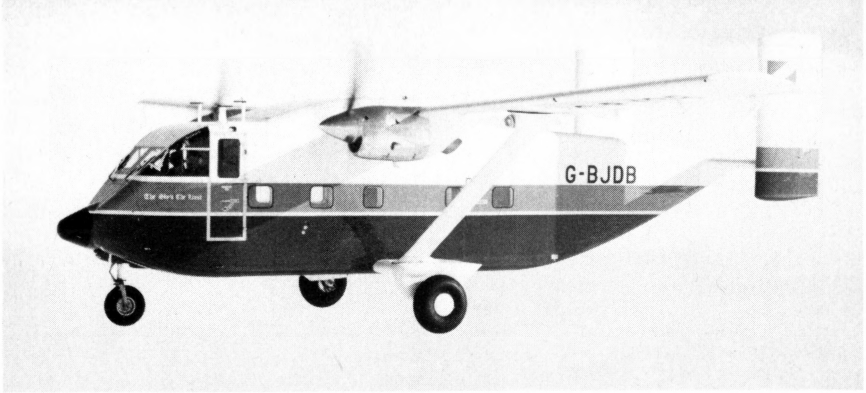
The U.S. Army has ordered a further six Beechcraft C-12D utility aircraft for delivery between January and March 1983. A military version of the Super King Air, the C-12D has a large cargo door.

Six C-12Ds from a previous contract are being delivered to the Army this summer and will join the current fleet of ninety C-12As, 'Cs and 'Ds. In addition, Beech have delivered ninety-nine C-12s to the U.S.A.F. and U.S. Navy.

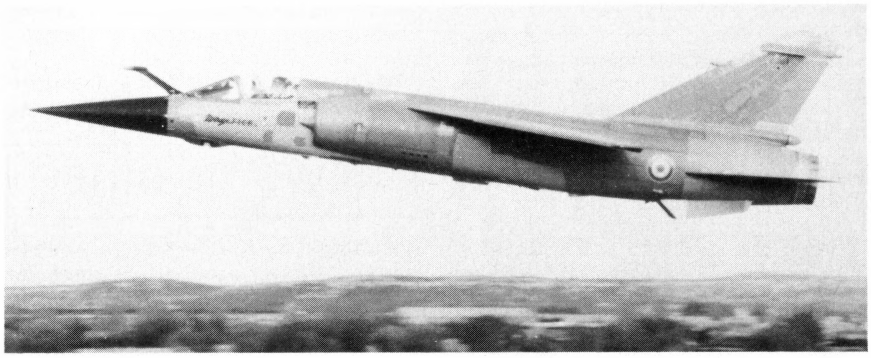
Hornet carrier trials

The U.S. Navy's new strike-fighter, the McDonnell Douglas F/A-18 Hornet, recently completed all test goals during nine days of sea trials aboard the nuclear-powered aircraft-carrier U.S.S. *Carl Vinson* (CVN-70) off the coast of Virginia. The Hornet's initial sea trials were flown aboard the U.S.S. *America* (CV-66) in autumn 1979.

During the recent tests the Hornet was launched at weights of up to 46,000 lb., undertook night opera-



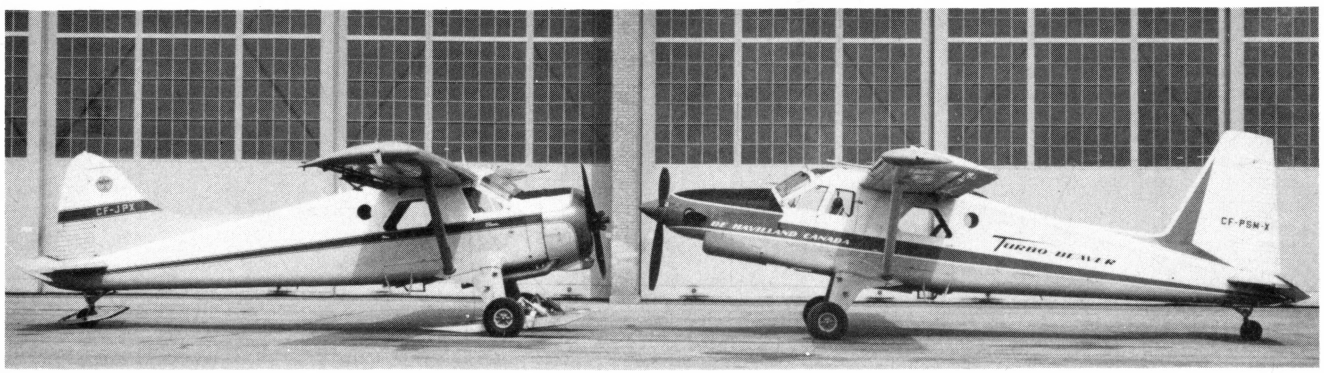
New Shorts Skyvan for the Government of Ciskei, seventh African country to adopt the type, G-BJDB will be operated by Border Air Charter of East London, South Africa. Firm orders for the Skyvan total 139



Dassault Mirage F 1CR under test, the new photo-reconnaissance version that will replace the French A.F.'s Mirage IIIRs in the 33E Escadre, *Strasbourg, early next year*

Above: *Recently delivered to Alas Chiricanas, Embraer EMP-110P1 Bandeirante HP-931 is the first of its type to be exported to Panama*

Operators of the D.H. Canada DHC-2 Beaver can now convert their aircraft (such as CF-JPX, left) to Mk.III Turbo-Beaver standard (as per CF-PSM-X) using a Pratt & Whitney PT6A-20 retrofit kit. Beaver production totalled 1,631, including 60 Turbo-Beavers



tions, and made serveral automatic approaches to touch-down under the control of the ship's automatic carrier landing system.

F/A-18 Hornets will enter service later this year with the U.S. Marine Corps, replacing McDonnell Douglas F-4 Phantoms. The U.S. Navy's first Hornet squadron will become operational in 1984 and deploy to sea in 1985.

Brazil's maritime Bandeirantes

The Brazilian Air Force recently formed a second squadron to operate the Embraer EMB-111 maritime patrol version of the Bandeirante. It is *2° Esquadrão do 7° Grupo de Aviação (2°/7° GAv),* equipped with nine aircraft and based at Florianopolis. The first squadron, *1°/7° GAv,* is based at Salvador.

Aérospatiale helicopters

During 1981 Aérospatiale's Helicopter Division booked orders for 769 helicopters, including: 59 AS.332 Super Pumas (plus 21 options), 87 AS.350 Ecureuils, 120 AS.350D AStars, 210 AS.355 Ecureuil IIs/TwinStars, 93 SA.365N Dauphin 2s, 32 AS.366Gs (U.S. Coast Guard version), and 123 SA.342 Gazelles.

On average 35 helicopters a month were produced at Marignane in 1981 and Aérospatiale are planning to double this rate to reach a figure of 75/80 helicopters per month by mid-1983.

Jet Aviation's busy year

Jet Aviation A.G. of Zürich, Switzerland, report that their Private Jet Services fleet utilisation was nearly 9,000 hours in 1981, a 26% increase on the previous year, and that 8,450 passengers were carried, compared with 6,921 in 1980.

The company now operates a fleet of eighteen business jets on behalf of the owners and for chartering: five Cessna Citations, two Gates Learjets, three Dassault Falcon 20s, one Falcon 50, three Grumman Gulfstream IIs, three Boeing 727s and one Executive Boeing 707.

British Island Airways (see May issue, page 165) made their first passenger flight, from Gatwick to Catania, on 2nd April using BAC One-Eleven G-CIBA "Island Ensign", one of four taken over from Air UK

NEWS IN BRIEF

Aeritalia, Italy's largest aircraft manufacturer, have acquired a minority shareholding in Macchi. Enhanced co-operation and nationalisation of the Italian aircraft industry are behind the move.

The U.S.A.F. expects to take delivery of its first three Rockwell B-1B bombers in 1985, followed by 21 in 1986, 48 in 1987, and 28 in 1988, making a total of 100.

The U.S. Navy has ordered fifty-five advanced trainer versions of the Bell TH-57 helicopter for use by Squadron HT-18 at NAS Whitney Field, Milton, Florida.

Britannia Airways, Luton, are leasing five Boeing 737s (two from Transavia, two from Quebec Air and one from Eagle Air Iceland) to bring their 737 fleet up to thirty-four aircraft to cope with record demands for the summer season.

NATO's first Boeing E-3A Sentry AWACS aircraft was delivered to Geilenkirchen, West Germany, on 24th February. Eighteen are on order.

The Rolls-Royce "Flying Bedstead" (VTO test rig) has been loaned to the Strathallan Aircraft Museum for two years by the Science Museum, London.

Air Canada have cancelled their options on six Lockheed TriStar 500s.

The Rolls-Royce Viper 680, a new version of the 4,000-lb. s.t. Viper 632, has been bench-tested at Bristol and is expected to develop 14.4% more thrust.

The Japanese A.S.D.F.'s last North American F-86F Sabre, 62-7497, was retired on 15th March. From 1956 onwards the J.A.S.D.F. received a total of 479 F-86Fs.

The Nigerian A.F., which operates twelve Dassault-Breguet/Dornier Alpha Jet trainers, plans to acquire 12–24 more Alpha Jets optimised for ground-attack.

The Venezuelan A.F.'s plan to purchase twenty-four British Aerospace Hawk trainers has been quoshed by the Venezuelan Government, acting in sympathy with Argentina during the Falklands Crisis.

Brazil has offered to supply Argentina with Embraer EMB-111 Bandeirante maritime-reconnaissance aircraft to assist in the dispute with Britain over the Falklands.

HeavyLift Cargo Short Belfasts were reported earlier this year to have been transporting dismantled Hawker Hunters to an unknown destination.

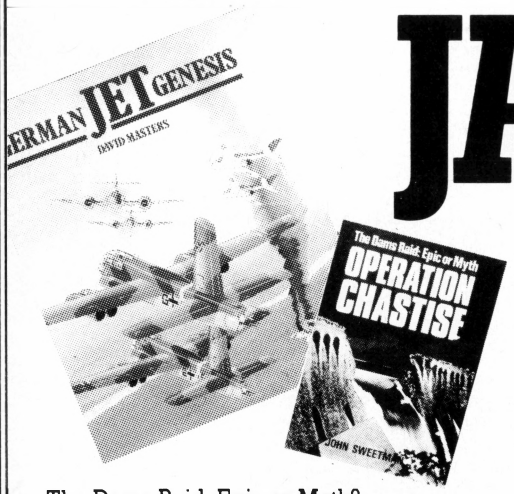
Abu Dhabi's air arm (part of the U.A.E.A.F., see May issue, page 169) is stated by French sources to have ordered an initial batch of six Dassault-Breguet/Dornier Alpha Jets —despite an earlier public statement of intent to buy the British Aerospace Hawk.

The Egyptian A.F. has increased its order for Dassault-Breguet/Dornier Alpha Jets from thirty to forty-five. The new batch will be optimised for ground-attack and will be assembled at Helwan, near Cairo.

The Rockwell International B-1 bomber, now under development for the U.S.A.F., is expected to appear at this year's Farnborough air show.

Swissair have now taken delivery of their second McDonnell Douglas DC-10-30ER (extended range), HB-IHO, which offers a 15% improvement. Two earlier DC-10-30s, are being modified

NEW BOOKS FROM JANE'S



The Dams Raid: Epic or Myth?

OPERATION CHASTISE

John Sweetman

A new, deeply reasoned analysis of the Dam Buster raid that sets out to reveal the truth behind the wartime myth-making. The text is based on a complete range of the documentation surrounding the raid, its objectives and the results that were achieved. Interviews with the commanders and surviving aircrew give fascinating insights to the realities of such dangerous missions. Illustrated with many contemporary photographs and diagrams.

£9.95 Publication date April 22

GERMAN JET GENESIS

David Masters

During the Second World War the German aircraft industry, in spite of incompetent and interfering leadership, managed to produce enough operational jets to give the allies a considerable shock. This highly illustrated book examines not only production aircraft like the Me 262 and the Arado 234 but also the many exotic jet and rocket powered aircraft projects that existed. These ranged from Focke-Wulf *Triebflugel* vertical take-off interceptor, with its huge tip-driven rotor and tail-sitting undercarriage to the Saenger-Bredt stratospheric bomber.

£8.95 Publication date May 27

Available from good booksellers

GIANTS IN THE SKY

Michael J.H. Taylor
and David Mondey

This remarkable book, illustrated with 200 outstanding photographs covers 100 of the giants of aviation. Even the most avid enthusiast will discover a host of unfamiliar types, whether built to bomb strategic targets in time of war or carry an outrageous number of people over an incredible distance. No period of aviation has been ignored because all have had their outsized exponents.

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THE SPITFIRE STORY

Alfred Price
Foreword by Jeffrey Quill

This book is the outcome of many years of detailed research on the evolution of the Spitfire, by the distinguished and best-selling aviation historian, Alfred Price. The text goes into far greater detail on this subject than anything previously published, and can reasonably claim to be the ultimate on the history of this most famous aircraft. The illustrations include the most complete collection of photographs ever published on the evolution of the Spitfire, and superb colour artwork and line drawings by Peter Endsleigh Castle and Harry Robinson.

£15.00 Publication date May 27

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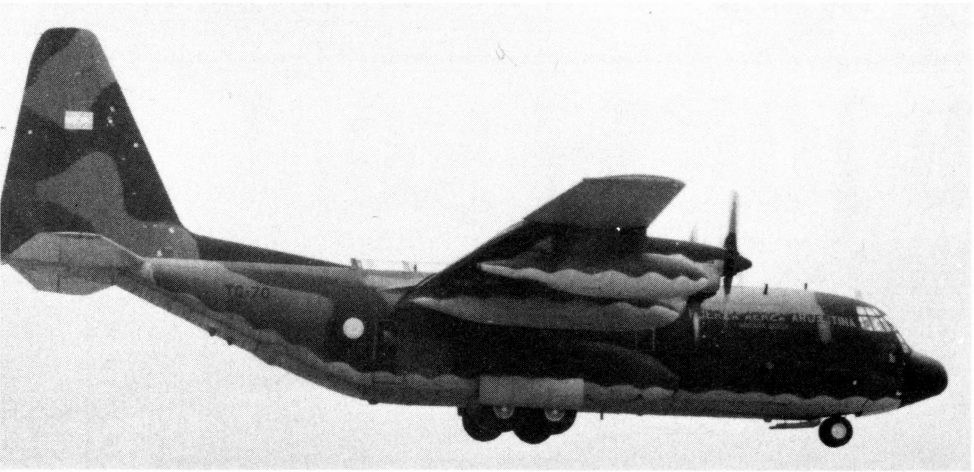


Argentine Air Power

At the start of hostilities the Argentine A.F. had nine Lockheed Hercules which were busy ferrying supplies to the Falkland Islands, until the British air blockade was imposed. TC-70 (illus.) is one of two KC-130H Hercules equipped as tankers (Photo: G. Finch)

AT THE time of writing, with South Georgia back under British control and the Royal Navy's task force already in the area of the Falklands, the possibility of full-scale hostilities with Argentina is still a matter for concern and speculation. It is perhaps an appropriate moment to survey, albeit briefly, Argentine air power. All three services maintain substantial air forces, together totalling more than 700 aircraft. Although a relatively high proportion of these machines are nearing obsolescence, Argentina is far from being an impotent adversary in the air.

The *Fuerza Aerea Argentina* (Air Force) is the largest of the three major air arms, operating approximately 450 aircraft, of which about 190 are front-line combat types, including the survivors of 75 McDonnell Douglas A-4P Skyhawks, 21 Dassault Mirage IIIs and 26 IAI Daggers.

Naval air operations are controlled by the *Comando de Aviacion Naval Argentina* and are centred around the 16,000-ton carrier *25 de Mayo* (ex-Hr.Ms. *Karel Doorman*, ex-H.M.S. *Venerable*), purchased from the Netherlands in 1958. The inventory numbers some 130 aircraft, less than twenty being combat machines. Newest of these are the six Dassault Super Etendards so far delivered. The remainder of the batch is likely to be embargoed at least until the present situation is resolved.

The third air arm is the *Comando de Aviacion del Ejercito*. Almost 150 aircraft, principally helicopters and communications types, are flown on a variety of army support tasks.

During the Argentine invasion of South Georgia on 3rd April the small British detachment of Royal Marines claimed to have destroyed one Puma and one Alouette III; the serials of these two helicopters have still to be established. Details of subsequent events appear elsewhere in this issue.

(In the following tables, types currently on inventory are listed alphabetically by manufacturer. Lack of space has forced the exclusion of c/ns. and previous identities.)

ARGENTINE AIR FORCE ORGANISATION

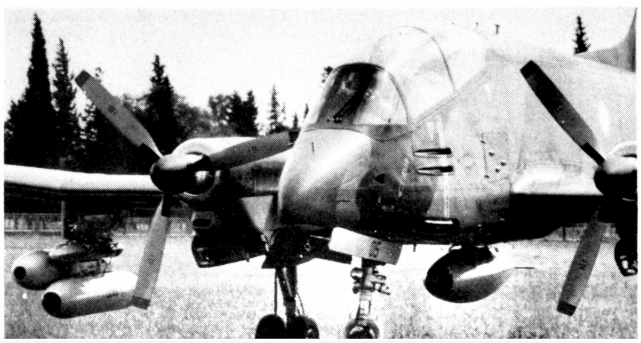
Wing	*Aircraft*	*Base*	*Role*
II Brigada Aerea	Canberra	General Urquiza	Attack
	Huanquero	Reconquista	Reconnaissance
	Pucara	Reconquista	Attack/COIN
IV Brigada Aerea	Dagger	El Plumerillo	Interception
	Paris	El Plumerillo	COIN/Training
	Skyhawk	El Plumerillo	Attack
VII Brigada Aerea	Hughes 500M	Moron	COIN
	Mirage III	Moron	Interception
	UH-1H Iroquois	Moron	COIN
I Brigada Aerea	B707, C-130, C-47, F.28, Guarani, Sabreliner	El Palomar	Transport/VIP
Lineas Aereas del Estado (LADE)	F.27, F.28, DHC-6	El Palomar	Transport
Servicios Aereas Estado Nacional (SADEN)	Miscellaneous	Rio Gallegos	Liaison/Casevac/SAR
	S-61NR	Moron	SAR
	T-34A Mentor	Cordoba	Training

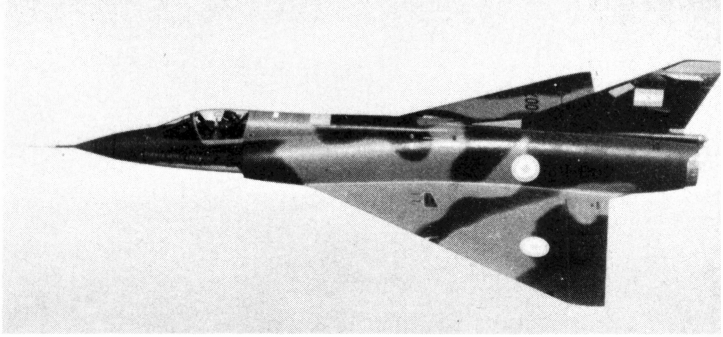
ARGENTINE AIR FORCE *(Fuerza Aerea Argentina)*

Type	*Total In Use*	*Total Del'd.*	*Confirmed Serials*	*Remarks*
Aero Commander 500U	13	24	T-130 to T-153	Del'd. from 1968; T-140 written-off 25/1/78
Aérospatiale SA.315 Lama	12	14+	H-61 to H-66	Del'd. from 1973
BAC Canberra B.62	8	10	B-101 to B-110	Del'd. 1970/71; ex R.A.F. B.2s; B-103 w.o. 22/11/71
BAC Canberra T.64	2	2	B-111 & B-112	Del'd. 1971; ex R.A.F. T.4s
Beech T-34A Mentor	25+	90	E-001 to E-090	Del'd. 1957-65; w.o. E-013, E-047, E-051, E-054, E-058, E-061, E-077
Bell 47G/J	3	4	H-53	Del'd. 1967; H-53 w.f.u.
Bell UH-1D Iroquois	4	4	H-10 to H-13	Del'd. 1969
Bell UH-1H Iroquois	2	3	H-14 to H-16	Del'd. 1974
Bell 212	8	8	H-81 to H-88	Del'd. 1978
Boeing 707-387B	3	3	TC-91 to TC-93	Del'd. 1975-82; last two ex Aerolineas Argentinas
Boeing-Vertol CH-47C Chinook	2	3	H-91 to H-93	Del'd 1980; H-92 w.o. 28/1/82
Cessna A182J	40	40	PG-341 to PG-379	Del'd. 1976; locally assembled
Cessna 310	1	1	PG-386	Del'd. by 1977
Dassault Mirage III	20	21	I-001 to I-012, I-014, I-016 to I-018	Del'd. 1972-78 & 1980; includes two Mirage IIIDs
DHC-2 Beaver	3	6	P-01 to P-06	Del'd. 1960-64
DHC-3 Otter	1	5	P-11 & P-12	Del'd. 1965
DHC-6 Twin Otter	6	7	T-81 to T-87	Del'd. 1968/69; T-87 w.o. 7/8/77
Douglas A-4P Skyhawk	64	75	C-201 to C-275	Del'd. 1966/67; C-213 w.o. 27/12/78
Douglas C-47	6	36+	TC-1, T-02, S-3, TA-05 to TA-07, TC-11, T-12 to T-14, TC-15, T-16, TC-17, TC-18, T-19, TC-20, TC-21, T-22, T-24, T-26 to T-39, T-101 to T-103 & T-145	Del'd. from 1947; w.o. TC-17 TC-20, & T-33
FMA IA-35 Huanquero	15	47	Ea-001 to Ea-004, A-305, A-307, A-316, A-322, A-323, E-508 to E-530, F-24, F-504 to F-506, T-550 & T-551	Del'd. 1957-62; E-509 w.o. 16/7/67

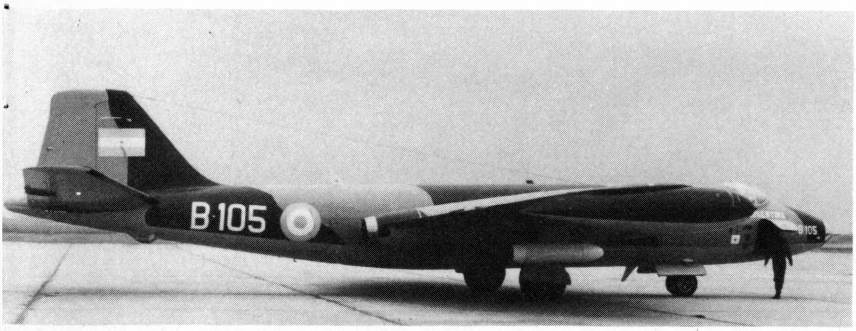
(continued overleaf)

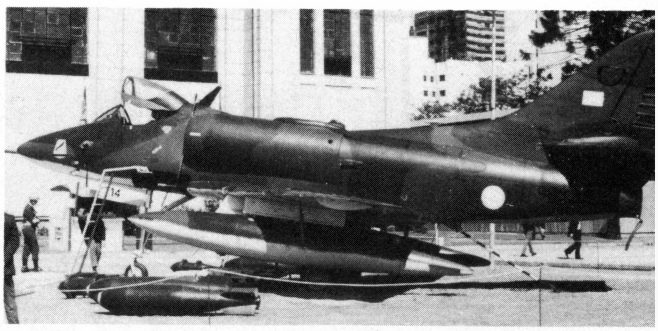
Two views of the prototype FMA IA-58B Pucará Bravo, AX-05, which has a deepened forward fuselage accommodating heavier armament than in the earlier IA-58A Pucará. Examples of the latter have been seen operating from Port Stanley in the Falklands





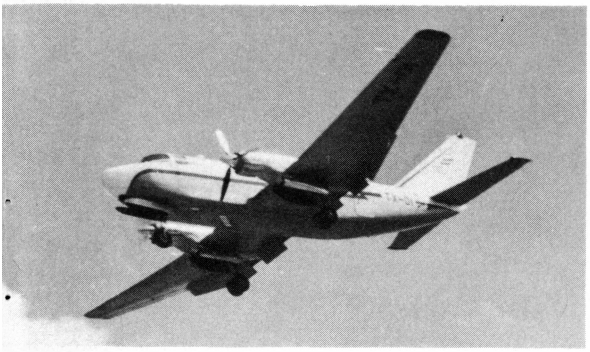
Left: *Argentine A.F. McDonnell Douglas A-4P Skyhawks when they first entered service (Photo: via J. M. G. Gradidge).* Right: *Dassault Mirage IIIEA I-007*

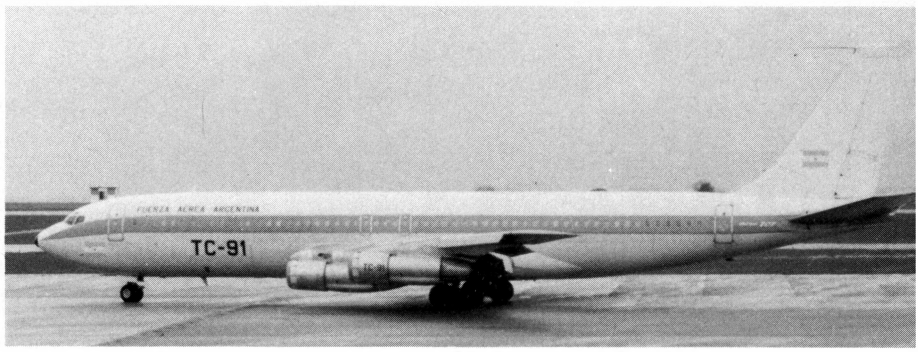




Left: *BAC Canberra B.62 B-105; R.N. Sea Harriers have since destroyed one at least.* Right: *Skyhawks are now camouflaged (C-214 illus.)*

Left: *Argentine A.F. D.H. Canada Twin Otter T-83.* Right: *One of the Air Force's Bell 212s, H-85, with searchlight under nose*





Above Left: *Argentine-produced FMA IA-50 Guarani light transport; TX-01 is the prototype.* Right: *Boeing 707 TC-91 (Photo: G. Finch)*

Below Left: *Argentine A.F. Fokker F.27 Friendship 400M TC-72.* Right: *Also from Fokker is this F.28 Fellowship 1000, serialled TC-55*

Argentine Air Power . . .

All three Argentine Services operate a diverse selection of communications and light transport types. These two Beechcraft Super King Air 200s, coded 4-G-44 and 4-G-45, belong to the Navy's 4 Escuadrilla *at Punta de Indio*

Type	*Total In Use*	*Total Del'd.*	*Confirmed Serials*	*Remarks*
FMA IA-50 Guarani	22	25	TX-01, TX-110, T-111 to T-126, F-31 to F-35 & VR-16-15	Del'd. 1968-74; T-123 w.o. 27/5/69
FMA IA-58 Pucará	75	80+	AX-01 to AX-06, A-19, A-501 to A-530	Del'd. from 1975; at least 20 more on order; AX-06 prototype IA-66; A-503, AX-03 w.o.
Fokker F.27 Friendship 400M	8	11	TC-71 to TC-78 & T-79 (TC-72 & TC-75 used twice)	Del'd. 1969-82; w.o. TC-72, TC-75, & TC-77
Fokker F.27 Friendship 600	5	5	T-41 to T-45	Del'd. 1968-75
Fokker F.28 Fellowship 1000	7	7	T-02, T-03, T-51 to T-55	Del'd. 1970-77; two are Presidential aircraft
Gates Learjet 35A	5	5	T-21 to T-24, VR-17	Del'd. 1977-81
Hughes 500M	13	14	H-21 to H-34	Del'd. 1970; armed
IAI Dagger	25	26	C-401 to C-426	Del'd. 1978/79
Lockheed C-130E Hercules	2	3	TC-61 to TC-63	Del'd. 1968; TC-62 w.o. 28/8/75
Lockheed C-130H Hercules	5	5	TC-64 to TC-68	Del'd. 1969-75
Lockheed KC-130H Hercules	2	2	TC-69 & TC-70	Del'd. 1979
Morane-Saulnier MS.760 Paris	39	48	E-201 to E-248	Del'd. 1958-63; locally assembled
Piper PA-31 Navajo	1	1	TS-01	Del'd. 1974
Rockwell Sabreliner 75A	1	1	T-10	Del'd. 1975
Sikorsky S-55	4	17+	H-1 to H-9	Del'd. 1954-61
Sikorsky S-58T	2	2	H-01 to H-02	Ex *Luftwaffe*; converted to PT-6Ts
Sikorsky S-61NR	1	1	H-71	Del'd. 9/74
Sikorsky S-61R	1	1	H-72	Del'd. 22/11/75
Swearingen Merlin IVA	2	2	—	Del'd. 1977

ARGENTINE NAVY *(Comando de Aviacion Naval Argentina)*

Type	*Total In Use*	*Total Del'd.*	*Confirmed Serials/ Current Codes*	*Remarks*
Aermacchi MB.326GB	8	8	0613/4-A-101 to 0620/ 4-A-108	Del'd. 1969-72
Aermacchi MB.339A	10	10	0761/4-A-110 to 0770/ 4-A-119	Del'd. 1980-81
Aérospatiale Alouette III	9	14	0641/2-H-1, 0642/ 3-H-2, 0643/3-H-3, 0648/4-H-4, 0649/ 3-H-5, 0650/4-H-6, 0651/3-H-7, 0680/ 4-H-8, 0681/3-H-9, 0699/3-H-10, 0736/ 3-H-11 to 0739/ 3-H-14	Del'd. 1969-78; write-offs: 0641, 0643, 0648, 0650, 0680
Beech AT-11	2	10	0523/1-G-50, 0524/ 4-G-15, 0525/1-G-52, 0526, 0527, 0528/ 4-G-12, 0529/4-G-13, 0543/4-F-11, 0544/ 1-G-55, 0545/1-G-56	Del'd. 1961; three to Uruguay 1979
Beech Queen Air	5	5	0679/4-F-21, 0687, 0688/3-G-82, 0689/ 3-G-83, 0690/1-G-84	Del'd. 1971-76
Beech Super King Air 200	10	10	0697/5-T-31, 0698/ 5-T-32, 1-G-41, 1-G-42, 4-G-43 to 4-G-45, 2-G-46 to 2-G-48	Del'd. 1975-81
Beech T-34C Turbo-Mentor	15	15	0719/1-A-401 to 0733/ 1-A-415	Del'd. 1977/78
Dassault Super Etendard	6	6	0751/3-A-201 to 0755/ 3-A-205	Del'd. 1981; eight more on order
Douglas A-4Q Skyhawk	12	16	0654/3-A-201 to 0669/ 3-A-316	Del'd. 1972; w.o. 0664, 0666, 0668, 0669
Douglas C-47	6	10+	5-T-10, 0264/5-T-11, CTA-12, CTA-13, CTA-15, 5-T-19, 5-T-21, 5-T-22, 5-T-23, 0188/5-T-24 & 0171/5-T-26	Del'd. 1960-62
Douglas C-54/DC-4	6	23	5-T-1, 5-T-3, 5-T-40, CTA-1 to CTA-3, 2-Gt-10 to 2-Gt-12	Del'd. 1960-79
Fokker F.28 Fellowship 3000	1	1	0740/5-T-10	Del'd. 6/79
Fokker F.28 Fellowship 3000C	2	2	0741/5-T-20 & 0742/ 5-T-21	Del'd. 4/79 & 8/79
Grumman S-2A Tracker	6	6	0509/2-AS-1 to 0514/ 2-AS-6	Del'd. 1964; may be w.f.u.
Grumman S-2E Tracker	6	6	0700/2-AS-21 to 0705/ 2-AS-26	Del'd. 1978/79

Top Left: *Argentine Navy Westland Lynx Mk.23 3-H-41, a type purchased for use aboard the two newest destroyers*
Bottom Left: *Shorts Skyvan 3M PA-54 of the* Prefectura Naval; *Skyvans have been seen at Port Stanley*
Below: *Beechcraft T-34C Turbo-Mentors of the Navy's training school at Punta de Indio*

Hawker Siddeley HS 125-400B	1	1	0653/5-T-30	Del'd. 28/7/70
Lockheed L-188A Electra	3	3	0691/5-T-1 to 0693/5-T-3	Del'd. 1973; ex American Airlines
Lockheed SP-2E Neptune	1	6	0541/2-P-101, 0644/2-P-103, 0682/2-P-104 & 0683/2-P-105	Del'd. 1966–72; 0644 w.o. 15/9/75
Lockheed SP-2H Neptune	8	9	0706/2-P-110 to 0708/2-P-112, 0709/2-P-114, 0718/2-P-114	Del'd. 1972–78; 0709 w.o. 15/9/76
Pilatus PC-6A-1 Turbo-Porter	3	4	0674/6-G-1, 0684/6-G-2 to 0686/6-G-4	Del'd. 1971; 0674 w.o. 20/1/78
Piper PA-31 Navajo	4	4	1-G-83	Del'd. 1975
Sikorsky SH-3D Sea King	5	5	0675/3-H-231 to 0678/3-H-234, 0696/35	Del'd. 1972
Westland Lynx 23	2	2	0734/3-H-41 & 0735/3-H-42	Del'd. 29/8/78; eight more on order

Argentine Naval Air Bases

Base	*Aircraft*
Comandante Espora	Super Etendard, A-4Q Skyhawk, S-2A/E Tracker, SP-2E/H Neptune, Queen Air, Sea King, Alouette III
Ezeiza	C-47, C-54/DC-4, Electra, HS 125, Super King Air
Punta de Indio	MB.326, MB.339, T-34C Turbo-Mentor

ARGENTINE ARMY *(Comando de Aviacion del Ejercito)*

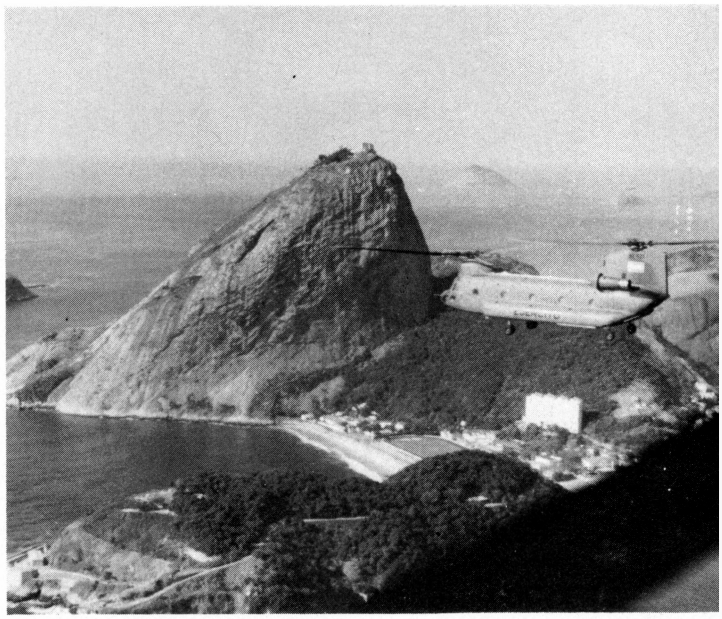
Type	*Total In Use*	*Total Del'd.*	*Confirmed Serials*	*Remarks*
Aeritalia G.222	3	3	AE-260 to AE-262	Del'd. 1977/78
Aero Commander 690A	5	5	AE-128	Del'd. 1975/76
Aérospatiale SA.315 Lama	18	18	AE-385 to AE-390	Del'd. 11/75–8/80
Aérospatiale SA.330L Puma	11	12	AE-507	Del'd. 1979
Agusta A.109A	18	18	AE-331 to AE-339	Del'd. 1979–81
Beech King Air 100	1	1	—	Del'd. 1971
Beech Queen Air B80	1	1	AE-109	Del'd. 1972
Bell 47G	2	5	AE-396	Del'd. 1906–64
Bell UH-1H Iroquois	18	20	AE-400 to AE-407, AE-410, AE-412 & AE-415	Del'd. 1971–77
Bell 206A JetRanger	7	7	—	Del'd. 1969
Bell 212	2	2	—	Del'd. 1976
Boeing-Vertol CH-47C Chinook	2	2	—	Del'd. 1979
Cessna A182J	15+	30	AE-200 to AE-215	Del'd. 1957–71; AE-205 & AE-208 w.o.; many others sold
Cessna T-41D	6	6	AE-051 to AE-055, AE-059	Del'd. from 1976
Cessna T207	7	7	AE-216 to AE-220	Del'd. 1976 & 1979
Cessna 500 Citation 1	1	1	AE-185	Del'd. 1978
Cessna 550 Citation 2	1	1	AE-129	Del'd. 1979
DHC-6 Twin Otter	2	3	AE-257 to AE-259	Del'd. 8/68; AE-259 w.o. 5/1/75
Fairchild-Hiller FH-1100	6	7	AE-300 to AE-306	Del'd. 10/68; AE-303 w.o.
Pilatus PC-6 Turbo-Porter	3	3	—	Del'd. 1978
Piper PA-31 Turbo-Navajo	4	9	AE-101 to AE-105	Del'd. 1969 & 1975; first five sold in 1973
Rockwell Sabreliner 75A	1	1	AE-175	Del'd. 1975
Swearingen Merlin IIIA	4	4	AE-176 & AE-177	Del'd. 1977
Swearingen Merlin IVA	3	3	AE-178 to AE-180	Del'd. 1979

Argentine Navy Grumman S-2A Tracker 2-AS-2; later S-2Es are operated by the carrier and have also been seen at Port Stanley

One of the Navy's Macchi MB.326GBs, 3-A-102 (probably since recoded)

Above: *Navy Lockheed SP-2E Neptune 2-P-104; newer SP-2Hs are operational*

Left: *Argentina has long been using aircraft in connection with her Antarctic activities. Shown here are two D.H. Canada Beavers, P-03 and P-06, of the Air Force's* Grupo Aereo Antartico. Right: *Argentine Army Boeing-Vertol Chinook AE-521*



Aboard H.M.S. "Hermes" during the long voyage south—Left: *Men keep fit in front of a No. 826 Squadron Sea King HAS.5.* Right: *Two Sea Harrier FRS.1s at readiness. Squadron markings have been removed, roundels overpainted blue/red and finish toned down*

Falklands Air War

THE FIRST significant event in the air war that has developed as a result of the Argentine invasion of the Falkland Islands on 2nd April was the seizure that day by Argentine ground forces of the airfield at Port Stanley with its 4,000-ft. asphalt-surfaced runway. (Perhaps it ought to have been mined, for destruction by the Royal Marines posted there.)

From then on the airfield was used intensively by Argentine aircraft flying in troops and supplies from the mainland some 350 miles away, even more intensively after the Royal Navy had imposed a sea blockade around the islands from 12th April, with a temporary halt after the first British attack on the airfield on 1st May. Backbone of the "air bridge" has been the Argentine A.F.'s nine Lockheed C-130 Hercules, but other transports used have included Fokker Fellowships and Friendships, and (after the first British raid) Shorts Skyvans of the *Prefectura Naval.*

Argentine military aircraft observed operating from Port Stanley airfield have included at least two Navy Grumman Trackers, Air Force IA-58 Pucará twin-turboprop COIN aircraft, and helicopters of all three Services: Westland Lynx, Boeing-Vertol Chinooks, Bell UH-1Hs and Agusta A.109s. The helicopters have also been using several small grass strips in the islands, notably at Goose Green.

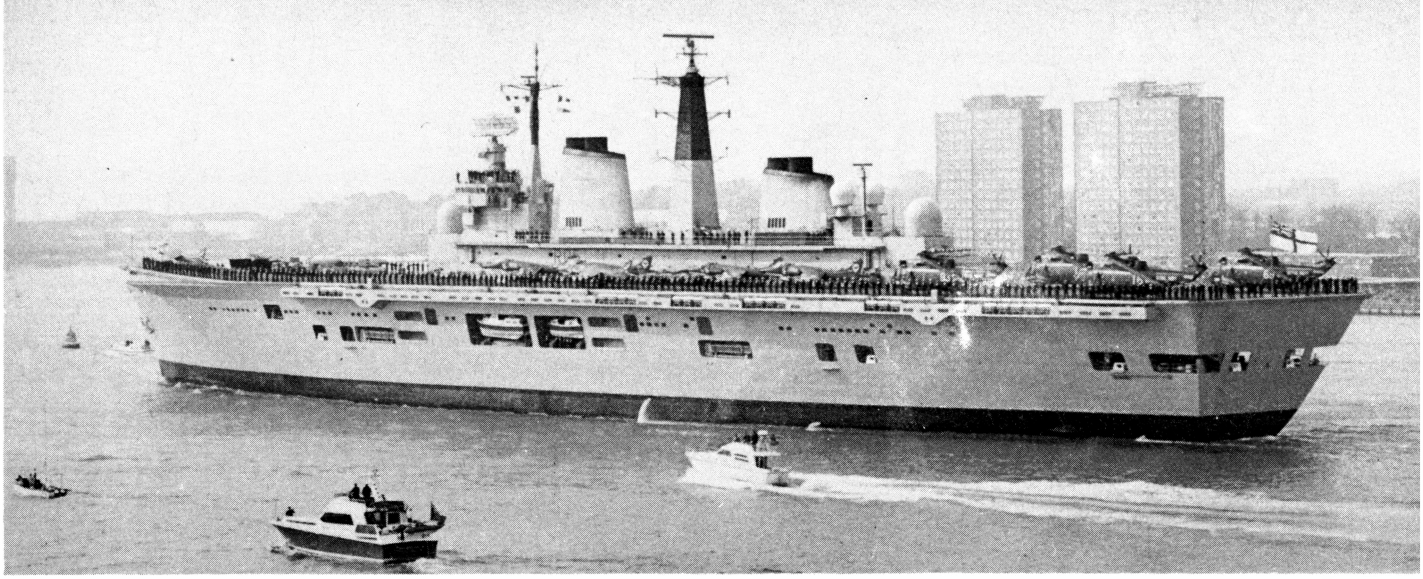
The Argentine invasion of South Georgia, 800 miles to the east of the Falklands, on 3rd April was contested by a detachment of twenty-two Royal Marines who had been put ashore at Grytviken on 31st March. During the fighting the Marines claimed the destruction of an Argentine Alouette III helicopter by gunfire and a Puma which they hit with their Carl Gustav rocket-launcher. They also scored a hit with this anti-tank weapon on an Argentine Navy corvette (*Granville?*), holing the vessel below the water-line.

Fleet Air Arm squadrons

On 5th April the main elements of the Royal Navy's Task Force set sail from Portsmouth. They included the aircraft-carriers H.M.S. *Hermes* and H.M.S. *Invincible.* Normal air complement of each ship is five Sea Harrier FRS.1s (No. 800 Squadron in *Hermes*, No. 801 in *Invincible*) and nine Sea King HAS.5s (No. 826 Squadron in *Hermes,* No. 820 in *Invincible*), but the carriers departed with a total of twenty Sea Harriers (including those of No. 899 Squadron, the H.Q. unit from R.N.A.S. Yeovilton), plus ASW Sea Kings of No. 706 Squadron (a second-line unit) and the Commando-carrying Sea King HC.4s of No. 846 Squadron. In addition, destroyers and frigates carried a helicopter apiece (Lynx HAS.2s of No. 815 Squadron or Wasp HAS.1s of No. 829). Commando-carrying Wessex HU.5s embarked in the amphibious assault ships *Fearless* and (rapidly de-mothballed) *Intrepid* came from No. 845 Squadron.

Simultaneously R.N.A.S. Yeovilton speeded up pilot training for R.N. Sea Harriers (the remaining thirteen of the Navy's order had all been delivered before the end of April) and R.A.F. Harrier GR.3s provided by No. 1 Squadron and No. 233 O.C.U., Wittering. The R.A.F. Harriers, basically ground-attack aircraft, have been fitted with Sidewinder missiles for self-defence and

H.M.S. "Hermes" leaving Portsmouth on 5th April, her flight deck packed with eleven Sea Harriers, including some of No. 899 Squadron as well as the ship's No. 800, and seventeen Sea Kings of No. 826 Squadron and Commando-carrying No. 846 Squadron



H.M.S. "Invincible" departs. Visible are five Sea Harriers of Nos. 801 and 899 Squadrons and four Sea Kings of No. 820 Squadron

their pilots have been practising on Yeovilton's ski-jump. A new Sea Harrier squadron, No. 809, was formed at Yeovilton on 6th April.

Among the many merchant ships chartered by the Navy were the container ships *Atlantic Conveyor* (possibly suitable for Harrier operations but also conveying the Chinooks of No. 18 Squadron, R.A.F.), *Atlantic Container* and *Atlantic Causeway*. The last-named is being converted into a "mini-carrier" and may be fitted with a ski-jump. She is expected to embark a new Sea King Squadron, No. 825, which was commissioned at R.N.A.S. Culdrose on 7th May.

During its long haul south via the rendezvous point of Ascension Island the Task Force suffered its first casualty, on 24th April, when a Sea King from *Hermes* had to ditch; the pilot was saved but the crewman died. A few days earlier, on 21st April, an Argentine A.F. Boeing 707 searching for the Task Force was intercepted and warned off by a Sea Harrier; a repetition of this incident occurred the next day, 22nd April.

Meanwhile the Pan Am-managed Wideawake airfield on Ascension was receiving supplies flown in by R.A.F. VC10 and Hercules transports plus HeavyLift Belfasts and being built up as an air base for subsequent operations. Also flown in to Wideawake was the Task Force commander, Rear Admiral J. F. Woodward, who joined his flagship, *Hermes*, off Ascension.

South Georgia recaptured

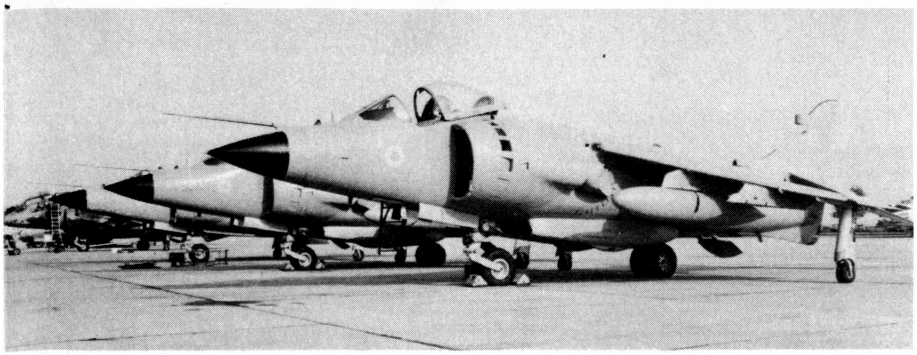
On 25th April South Georgia was recaptured by a detached R.N. force in an almost bloodless assault (one Argentine sailor wounded), at the start of which the Argentine submarine *Santa Fé* was caught on the surface by two R.N. helicopters (presumed to be Lynx but possibly Wasps). Severely damaged by the helicopters' missiles and machine-gun fire, the submarine limped into Grytviken Harbour and was beached.

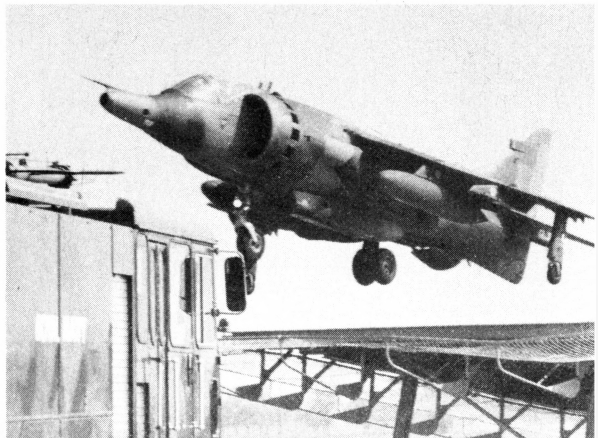
On 28th April the British Government gave Argentina 48 hours' warning that an air blockade over a 200-mile radius around the Falklands would be imposed to complement the sea blockade already enforced by R.N. nuclear-powered submarines. Argentina was further warned that Port Stanley airfield would be closed and that any aircraft found there would be liable to attack.

At 4.40 a.m. on 1st May (Admiral Woodward's birthday) the airfield at Port Stanley was bombed by R.A.F. "Vulcan aircraft operating from Ascension and refuelled in the air by Victor tankers"; the Ministry of Defence statements have been deliberately sparse to avoid giving away useful information to the enemy. It appears that only one Vulcan attacked the runway, flying at high level and dropping delayed-action H.E. and cratering bombs. A few hours later, at dawn, Sea Harriers from the carriers, each armed with three 1,000-lb. bombs, attacked the runway and adjacent installations, and also the grass airstrip at Goose Green, some 60 miles west. The only damage to British aircraft was a shell hole in a Sea Harrier's rudder. Subsequent reconnaissance photographs showed that one of the Sea Harrier pilots had hit the centre of the Port Stanley runway with two of his three bombs.

The Vulcan raid, involving a round trip of some 7,000 miles, was the longest in the R.A.F.'s history, and must also have convinced the *Junta* that bases in Argentina could be attacked. The flight from Ascension probably took about 13 hours with the Vulcan being refuelled once and possibly twice on its way out and once on the way back;

Left: *On the flight line at R.N.A.S. Yeovilton on 26th April were three new Sea Harriers, painted pale blue-grey and bearing the "Phoenix" badge of recently re-formed No. 809 Squadron, with (extreme left) a Harrier GR.3 of No. 1 Squadron, R.A.F.* Right: *A fortnight earlier R.A.F. Harriers were already practising on Yeovilton's ski-jump. AIM-9L Sidewinders will go under the outer pylons*





range of the Vulcan B.2 is 4,600 statute miles or 5,750 miles with one in-flight refuelling, so further details from the M.o.D. are eagerly awaited.

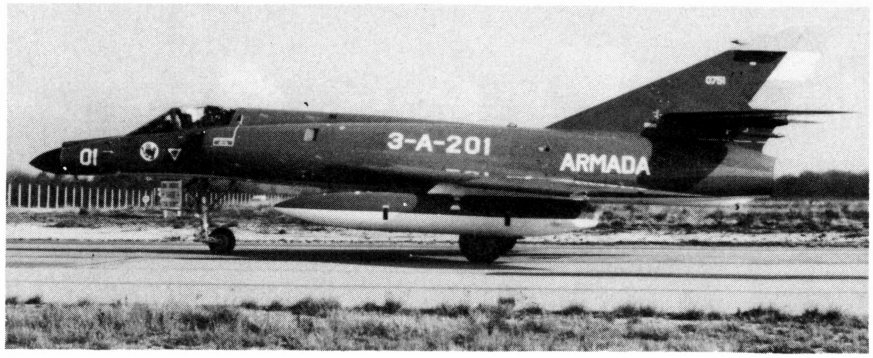
Sea Harrier's first victory

In the late afternoon of 1st May, around 5.00 p.m., while R.N. warships were bombarding the Port Stanley runway to reinforce the effects of the air attacks, Argentine A.F. Dassult Mirage IIIEA Mach 2.2 fighters from the mainland attacked the ships. They were engaged by Sea Harriers from *Hermes*. One Mirage was destroyed by F/Lt. Bertie Penfold, R.A.F., with a Sidewinder missile—the Sea Harrier's first victory. A second Mirage was seen to crash but appears to have been brought down by Argentine gunfire from around Port Stanley airfield. Argentina admitted to the loss of two Daggers (Israeli-produced developments of the Mirage).

During the evening Argentine A.F. Canberras attempted to bomb the Task Force. One Canberra was destroyed by a No. 801 Squadron Sea Harrier from *Invincible* and a second Canberra was "severely damaged". British losses throughout the day amounted to "splinter damage" to the frigate *Arrow*, one of whose sailors was wounded.

Early on 2nd May, at about 2.00 a.m., the nuclear-powered submarine H.M.S. *Conqueror* torpedoed the Argentine cruiser *General Belgrano*, 10,000 tons (ex-U.S.S. *Phoenix*, launched in 1938), who later sank. Her two escorting destroyers fled from the scene but later in the morning two Argentine patrol vessels, *Alferez Sobral* and *Comodoro Somellera*, out searching for survivors, came across a patrolling R.N. Sea King from *Hermes* and opened fire on the helicopter. The Sea King called up two Lynx which sank *Somellera* with Sea Skua missiles and severely damaged *Sobral* (now in dock at Puerto Belgrano).

Port Stanley airfield received another early morning visit from one or more R.A.F. Vulcans from Ascension on 4th May and later was attacked by R.N. Sea Harriers, which also attacked other airstrips on the islands. During the raid on Goose Green the Sea Harriers suffered their first casualty; the aircraft piloted by Lt. Nicholas Taylor was shot down by ground fire and he was killed.



Argentine Navy Dassault Super Etendard 3-A-201, normally based at Comandante Espora. Argentina is believed to have received six of the fourteen Super Etendards ordered

H.M.S. "Sheffield"

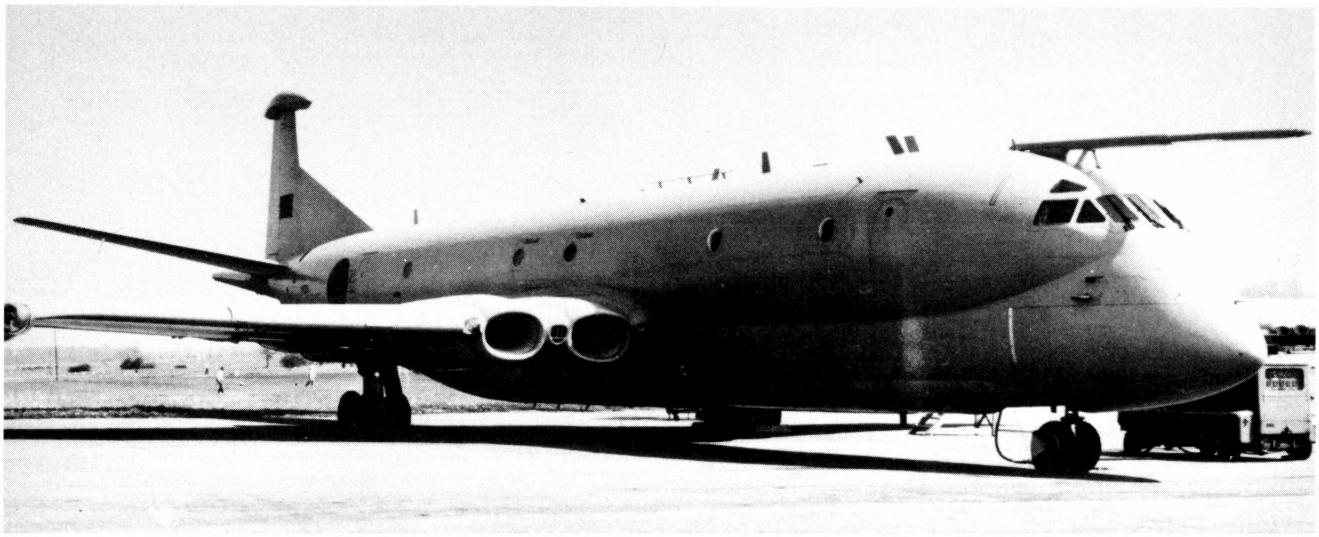
West of the Falklands that day was the Type 42 destroyer H.M.S. *Sheffield*, 4,100 tons, acting as a radar picket, to provide early warning of approaching hostile aircraft (since Britain no longer has any shipborne AEW aircraft). Having learned from what the Royal Navy pioneered with the Buccaneer, an Argentine Navy Dassault Super Etendard from a mainland base flew in low, under the ship's radar coverage, and launched two Exocet missiles from a range of about 22 miles—fed with target information, it is believed, by a high-flying Argentine reconnaissance aircraft. One of the Exocets appears to have been countered or destroyed, but the other struck *Sheffield* near her control room, gutting the ship which was eventually abandoned. Twenty of her crew were killed and others injured. Five days later *Sheffield*, still afloat, was taken in tow, but she finally sank in bad weather on 10th May.

Two Sea Harriers were lost during the morning of 6th May while out on patrol in bad weather; their pilots were Lt.-Cdr. John Eyton-Jones and Lt. William Curtis. Sea Kings carrying out ASW patrols that day reported visibility down to 200 yards at times.

On 7th May Britain announced that the sea/air military exclusion zone was being extended to 12 nautical miles from the Argentine coast. It was also announced that two R.A.F. squadrons of Nimrod MR.2s, recently modified for in-flight refuelling, would shortly be deployed to Ascension, which by now had about 1,000 British Servicemen in a "tented town" near the airfield. Ten Vulcans are believed to be based on Ascension, together with Victor tankers, and a request may be made to the U.S.A. for the loan of some Boeing KC-135 Stratotankers. Boeing E-3A Sentry AWACS aircraft would also be welcome as the R.A.F. has still to receive its first AEW Nimrod.

On 8th May Argentine A.F. Hercules transports escorted by Mirage fighters were observed approaching the Falklands but turned back when they saw Sea Harriers; a similar attempt to bring in supplies to the Falklands was foiled by Sea Harriers the next day. During the evening of 8th May Sea Harriers drove off Argentine Mirages which had got within 50 miles of the Fleet.

An R.A.F. Nimrod MR.2 with its new in-flight refuelling probe during recent trials at A. & A.E.E. Boscombe Down. Two squadrons of IFR-equipped Nimrod MR.2s are being deployed to Ascension to "widen Britain's options" during the current Falklands crisis



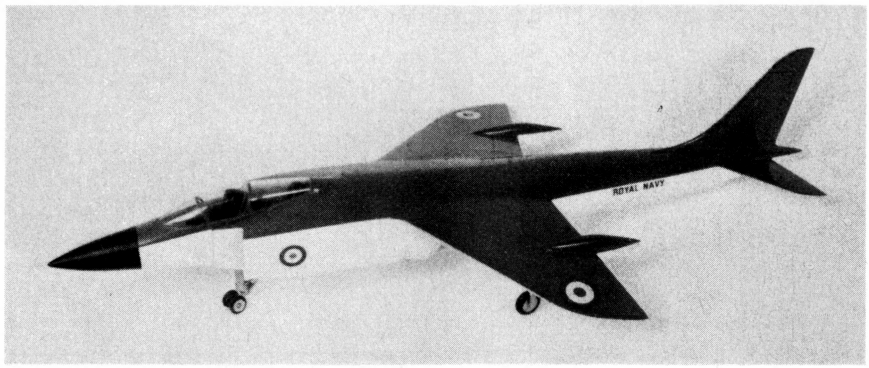
Sea Harrier reinforcement

Earlier on 8th May some twenty Sea Harriers and Harriers had flown non-stop from Yeovilton to Ascension, approximately 3,500 miles, being refuelled by tankers during their 9-hour flight. They were then transported by ship to join the Task Force off the Falklands.

Military installations on Port Stanley airfield were attacked again by Sea Harriers on 9th May. During the raid an Argentine Puma was shot down by (it is believed) an R.N. ship missile. Later two Sea Harriers were detailed to strafe an Argentine fishing vessel which had been persistently shadowing the Task Force in the exclusion zone; subsequently identified as *Narwal*, with an Argentine Navy officer in command, she surrendered and was taken over by an R.N. party put aboard by helicopter, but sank on 10th May.

One thing is evident, the amount of in-flight refuelling necessitated by all these operations is prodigious and entails very long sorties for the aircrew, particularly combat. How all this compares in cost and effectiveness with operations conducted from more than two light aircraft-carriers would make an interesting study—but at present Britain has no alternative.

Other Falklands news at the time of writing: the carrier *Bulwark*, paid off for scrap in March last year, has been surveyed to see if she could be made operational again, which now seems doubtful; and Mr. Rex Hunt, evicted Governor of the Falklands, expressed polite concern about his Cessna Skyhawk (left parked near the main hangar at Port Stanley) while complimenting the R.N. and R.A.F. on a "very good professional job well done".—*D.D.*



The Royal Navy's Sea Harriers have done very well so far, particularly against the Argentine A.F.'s supersonic Mirage IIIs. But, bearing in mind potential opposition from other sources, there is clearly a need for a Mach 2 successor to the Sea Harrier. Shown here is a model of the two-seat naval version of the Mach 2 Hawker Siddeley P.1154 V/STOL fighter—a project which was cancelled in 1964

Air Affairs

A monthly commentary by JOHN STROUD

WE HAVE in aviation over the last 60 years developed a magnificent network of high-speed long-distance air transport, with subsonic jet fleets making it possible to travel between almost any pair of major towns or cities in not much more than 24 hours, while Concorde spans the North Atlantic in just over 3 hours.

But the Falkland Islands problem suddenly brought home the fact that there are certain places and circumstances which force us back to the plodding 18 knots or so of the ship. The only way of reaching the Falkland Islands by air involved a routeing via Argentina, with the final leg being flown by courtesy of LADE, a transport section of the Argentine Air Force.

Thus in the dispute with Argentina, Britain suddenly found that the nearest available runway to the Falkland Islands was Wideawake on Ascension Island in the South Atlantic midway between West Africa and South America and some 3,500–4,000 miles from the Falklands.

Britain has been using Ascension as a supply and reorganisation point for the task force and Wideawake has been receiving R.A.F. Hercules and HeavyLift Cargo Airlines' Belfasts. By the time this column appears it may have handled a wider variety of British aircraft, such as Nimrods as well as the Vulcans and Victors.

Having given up or lost all our other bases in the area, we are lucky to have Ascension and we must be grateful to João de Nova who is said to have discovered the island on Ascension Day 1501. Although Portugal discovered the island that country did not occupy it and it was Alphonse d'Albuquerque who named the island when he visited it two years after de Nova.

The island is a rocky peak of volcanic origin, has an area of about 35 square miles, and is located about 700 miles north-west of St. Helena. Ascension remained uninhabited until 1815 when Napoleon was confined on St. Helena and a British naval garrison was stationed on Ascension. The island remained under the Board of the Admiralty until 1922 when it was made a dependency of St. Helena and came under the control of the Secretary of State for the Colonies.

Ascension is mostly barren but recently vegetation has been spreading to the lower levels from the 2,817 ft. Green Mountain—the highest point. Water has always been a problem but this has been largely overcome by distilling sea water.

The island became of importance during the laying of the South Atlantic cable. Cable and Wireless operate a station connecting the island with St. Helena, West Africa and South America, and also cultivate a 10-acre farm.

Ascension came on to the aeronautical map during World War II when a staging post was required for transport aircraft and for the ferrying of military aircraft from North America to the Middle East and beyond. A United States Army engineers detachment arrived in March 1942 and blasted and bulldozed a 6,700 ft. runway (14/32) in 91 days. All necessary buildings were constructed, defences installed and about 200 servicemen were stationed there to handle what became very heavy traffic. Since that time the runway has been extended to 10,000 ft. and it is equipped with lighting including approach lights. The airport reference point is 0758 S. 1424 W., the elevation is 273 ft. and the aids include NDB and TAC. Normally the tower operates from 30 minutes before an ETA until 30 minutes after take-off. I understand that Pan American World Airways manages the airport but that prior permission to land has to be obtained from the U.S.A.F. Patrick AFB in Florida.

Also on Ascension is the British civil satellite communications centre which began operation in 1966 and played an important part in the U.S. Apollo Programme.

The latest available population figure gave 1,231 inhabitants, mostly concentrated in Georgetown, but the best known occupants are the vast numbers of breeding Eastern Sooty Terns (the Wideawake birds) with some 3 ft. span and forked tails, and the sea turtles which visit the island to lay their eggs between January and May.

To give an idea of the really remote position of Ascension, I quote the Great Circle distances in nautical miles from Ascension to the nearest continental points—Banjul (formerly Bathurst) 1,287, Dakar 1,376, Freetown 999, Lagos 1,375, Recife 1,218 and Roberts International in Liberia 888. The distance to Fernando Noronha is 1,103 nautical miles.

Original prototype of the Wiweko WEL-1, the first aeroplane to be designed and built in Indonesia, in 1948

Indonesian Odyssey

by JOHN W. R. TAYLOR

ONE OF the delights of editing *Jane's All the World's Aircraft* is that each new year can be guaranteed to produce its quota of previously unknown aircraft for inclusion in the next edition. Sometimes they include a Soviet fighter or bomber that will earn headlines in the world press. The Wiweko WEL-1 offered no such promise when photographs of it arrived from Indonesia last summer. It is a tiny single-seat home-built of conventional parasol configuration. Only its story is remarkable—to the extent that it prompted a visit to Indonesia to learn if there were other interesting aviation developments in that seldom-reported part of the world.

When the WEL-1 was designed, the 13,677 islands and islets that constitute the Republic of the United States of Indonesia had not yet achieved complete and undisputed sovereignty. Despite a continuing Dutch blockade, which prevented purchase of materials overseas, First Officer Wiweko Soepono, head of the Indonesian Air Force's Design and Construction Branch, decided to produce a powered aeroplane that would symbolise his nation's determination to join the ranks of aircraft manufacturers one day. The result was the original WEL-1 (Wiweko Experimental Lightplane), powered by a 20-h.p. Harley-Davidson motorcycle engine with chain drive to the propeller, and registered R1-X.

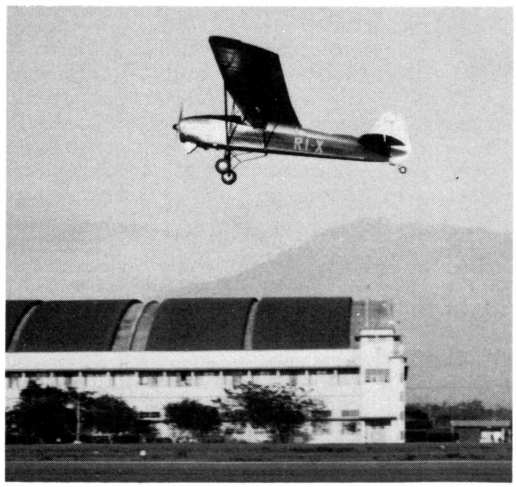
First powered aircraft designed and built in the Republic, the WEL-1 flew in 1948 and was displayed at an aviation exhibition. Shortly afterwards, during a rail journey, somebody tossed a grenade at the truck in which it was being transported, and the WEL-1 was destroyed. Far from ending its story, this led to a proposal thirty years later that replicas of the aircraft should be constructed for permanent display at the impressive Armed Forces Museum on the outskirts of the capital, Jakarta, and at the Air Force Museum in the former capital of Yogyakarta.

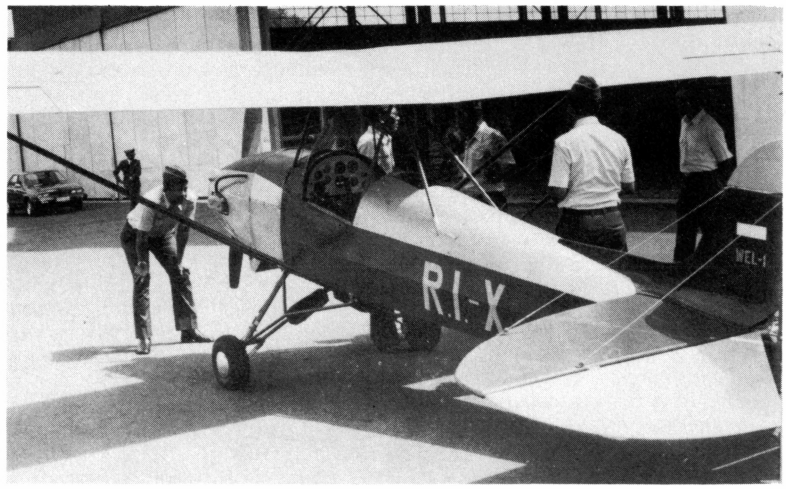
Wiweko WEL-1 replicas

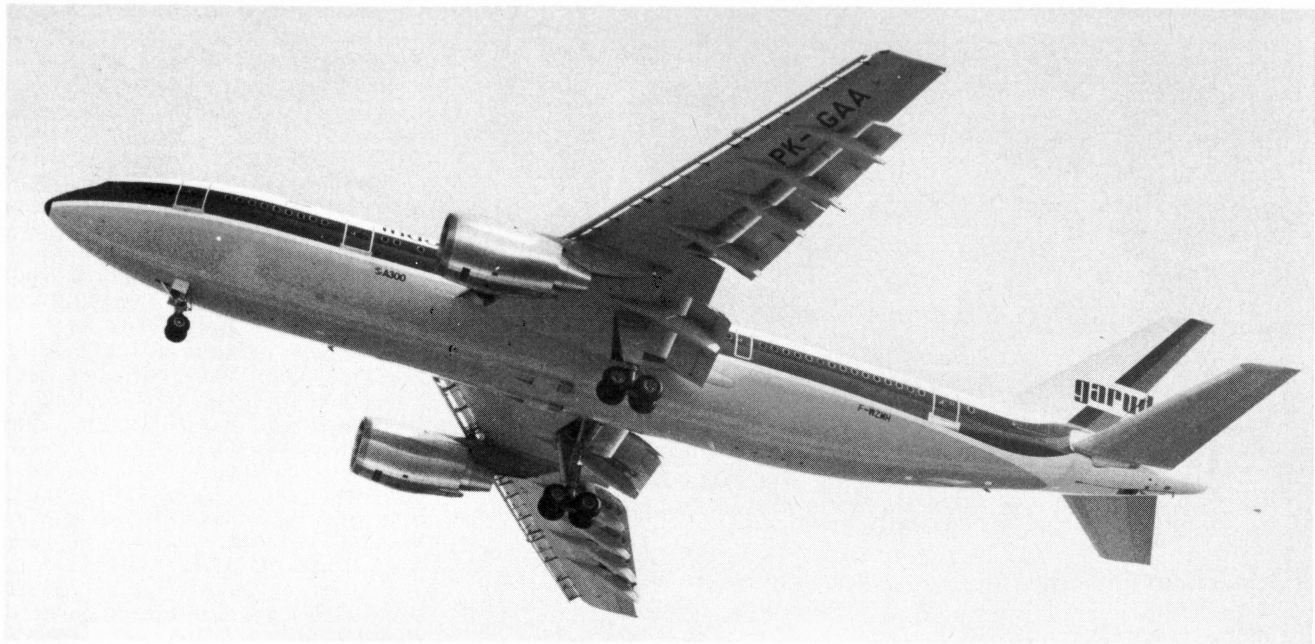
The replica now at Yogyakarta differs from the prototype in having a 70-h.p. Revmaster 2100 D converted Volkswagen engine in a conventional cowling, a dorsal fin, and bungee mainwheel shock-absorbers like those of a Piper Cub. The remainder of the airframe is unchanged, with wooden wings, welded steel tube fuselage and tail unit, all fabric covered, and open cockpit, lacking only the tall headrest of the original R1-X. No mere static exhibit, it was flown for the first time by the chief flying instructor of the Air Force Academy which shares the civil airport at Yogyakarta, who pronounced it a highly satisfactory sporting aircraft.

Its counterpart at Jakarta, with similar design changes, is displayed statically, under cover on a plinth, surrounded by as fascinating a collection of retired military aircraft as the well-travelled enthusiast will find anywhere. Assorted MiGs are almost ten a penny in Indonesia, as gate guardians or on plinths as highly superior substitutes for the Henry Moore "whatizits" one finds all over London; but it still feels a little eerie to walk around a MiG-21 fighter, or to study the austere

Sadly the original WEL-1 was destroyed by a grenade, but thirty years later it was decided to build replicas of the aircraft. Left: *The Revmaster-powered WEL-1 replica starts a cross-country flight.* Right: *Airworthy WEL-1 replica, now based at Yogyakarta*







Perhaps for more than anything else, Wiweko Soepono will be remembered as the "father" of the FFCC, the two-man forward-facing crew cockpit which Garuda Indonesian Airways was the first to introduce on its airliners—A300B4-200 Airbuses. Top: *Garuda A300 PK-GAA before delivery and still wearing test marks F-WZMH on its fuselage.* Left: *Garuda A300 cockpit.* Right: *A300 PK-GAD in service, at Kemayoran*

interior of a military Mi-4 helicopter. More familiar are the Piper Cub, C-47, Harvard, Mustang, B-25 Mitchell and anti-submarine Gannet, all carefully preserved in the open air. Less easy to recognise, and hence of special interest, are the Nakajima Ki-27 ("Nate") single-seat fighter and Yokosuka K5Y1 ("Willow") two-seat intermediate trainer, the latter built by Nippon Hikoki and used by the emergent Indonesian Air Force post-war.

The WEL-1 replicas were built, under the direction and guidance of Mr. Wiweko, by a homebuilt club named Akasamitra. During a visit to the "professional" aviation industry at Bandung two days later, there was time to make a brief diversion to see another WEL-1 under construction in the garage of an engineer who had worked on the 1948 original. This one, although not

Below: *One of the Air Force Academy's AS 202/18 A Bravo trainers, LM-2016, which operate at extremely high frequency from the airport at Yogyakarta*

The Sikumbang ("Bee") in its original NU-200 form—the first design by Air Marshal Nurtanio after whom the modern Indonesian aircraft industry is named

Indonesian Odyssey . . .

intended for flight, not only has an airframe identical with that of the original and completely airworthy, but is fitted with a duplicate Harley-Davidson engine and chain-driven propeller.

Nurtanio

Among the less familiar outdoor exhibits at the Armed Forces Museum had been a diminutive single-seat low-wing monoplane named the NU-25 Kunang ("Firefly"), with a 25-h.p. Volkswagen engine. This was recorded in *Jane's* in the late 1950s with the enthusiastic co-operation of Lt.-Col. (later Air Marshal) Nurtanio Pringgoadisurjo, then commanding officer of the Indonesian Air Force Research, Development and Production Depot at Bandung. He was killed in a flying accident in 1966, but his name lives on, as the nation's aerospace industry is now named PT Industri Pesawat Terbang Nurtanio (Nurtanio Aircraft Industry Ltd.) after its founder.

In the forecourt of the factory at Bandung stands the NU-225 Sikumbang ("Bee") light ground support monoplane, first aircraft built under Nurtanio's leadership. Inside, the lobby is dominated by a bronze bust of the Air Marshal, overlooking a detailed model of the new factory that is taking shape on the far side of the airfield.

"Taking shape" is a risky remark concerning progress at this site. Work on the 95-acre administration and manufacturing centre—nine times the size of the existing works—started eighteen months before my visit. Already, component manufacture was under way on computer-controlled machines in some halls. It mattered little that the odd wall was missing here and there. Even when the whole complex is completed, it will need no artificial lighting or heating in the environment of Bandung—an asset that will knock vast sums of money off the annual cost of its products.

Today those products are licence-built CASA NC-212 Aviocar twin-turboprop transports, MBB NBO 105 helicopters and Aérospatiale Puma/Super Puma helicopters. October 1983 should see the first flight of the far more ambitious CASA/Nurtanio CN-235, a jointly developed 34/38-passenger commuter/utility transport powered by two 1,700-s.h.p. General Electric CT7-7 turboprops.

The salesman from a major European manufacturer, encountered later in Jakarta, was pessimistic about the prospects of the six or seven aircraft that will soon be competing internationally in this category of new commuter airliners. He put his money on the Aérospatiale/Aeritalia ATR 42, feeling that the combined experience and strength of the French and Italian industries must give this aircraft an edge over its rivals. Perhaps he had not spoken to the President of Indonesia's domestic carrier Merpati Nusantara, who expects confidently to find an early use for as many as one hundred CN-235s, as his operations expand.

If such a potential order seems excessive, it is worth bearing in mind that Indonesia is already engaged in a farsighted transmigration scheme, under which family groups from overpopulated regions are voluntarily relocated to less populated areas, notably on the Republic's smaller islands. More than 200,000 people were moved to new homes by the first three of a fleet of "stretched" Lockheed L-100-30 Hercules transports in the first year and a half of the operation. Well over a million people will transfer eventually, and Merpati Nusantara will ensure that they never feel cut off from old surroundings and friends.

With such a customer on the doorstep, Nurtanio has little cause to fear for the future of its CN-235 programme. Even a brief visit was adequate to demonstrate that its workforce is able to work to high standards, and that its management has the right blend of professional ability and economic canniness to prosper in an era when so many of the older manufacturers are faltering.

Currently being produced under licence by Nurtanio is the CASA NC-212 Aviocar. This example serves with Merpati Nusantara, Indonesia's domestic carrier

Salatun

Nurtanio is generally regarded as constituting the entire aircraft industry in Indonesia, but this is not quite true. *Jane's* has listed for some years an organisation known as LAPAN (Lembaga Penerbangan dan Antariksa Nasional; National Aeronautics and Space Institute), which was established in 1963 under the original chairmanship of Air Vice-Marshal J. Salatun. Today the A.V.M. is a leading figure in everything aeronautical in Indonesia. When he promised a visit to "an aircraft factory in a shopping centre" he meant just that.

In the middle of Jakarta, between two shops, is a cluster of offices and workshops presided over by a young engineer named Dipl.-Ing. Suharto. His designs range from highly popular model aircraft to the LAPAN XT-400

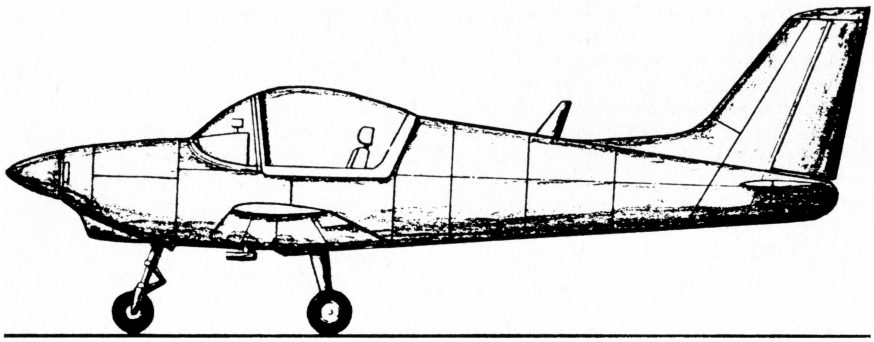
eight-seat passenger/cargo transport, powered by two 250-h.p. Avco Lycoming IO-540 engines and looking something like an Islander with a rear loading ramp. Construction of the prototype had to be suspended when funds ran low, but the "factory" has never run out of steam. At the time of my visit, work was under way on a variety of full-size aircraft, including a Spencer Air Car amphibian, an interesting own-design microlight, and the prototype of an all-metal side-by-side two-seat sporting/training aircraft designated ST-220, which is expected to fly soon.

At this stage of aviation development in Indonesia a handful of individuals can still influence all that is done, on the basis of personal experience and charisma. Air Marshal Nurtanio, Air Vice-Marshal Salatun, Dipl.-Ing. Suharto, and Prof. Dr.-Ing. B. J. Habibie, President Director of Nurtanio Aircraft Industry, were and are such men, and this brings us back to the first person mentioned in this brief survey—Wiweko Soepono.

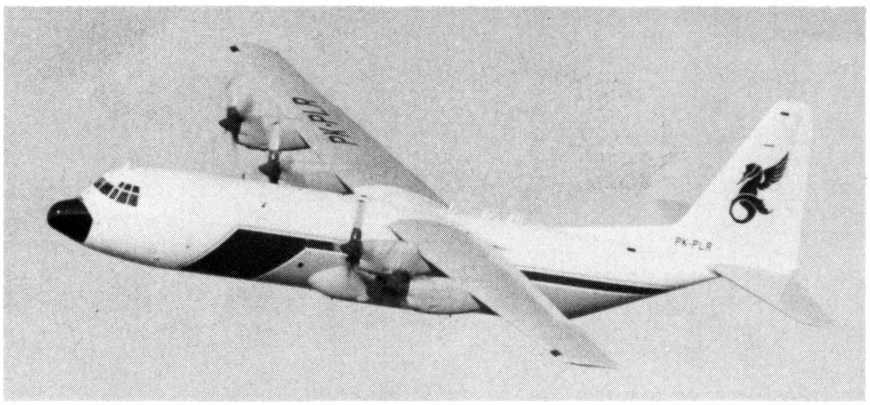
Wiweko

An article in the *Asian Wall Street Journal* told how "In 1948, with the country divided between Indonesian and Dutch-held enclaves, Mr. Wiweko, then 25, drew the assignment of buying the first aeroplane for the Republic's air force. The funds were raised in cash and gold by patriotic Sumatran merchants. When, in December, the Dutch attacked the republican capital of Yogyakarta, the plane, a C-47 Dakota, was in Calcutta for an overhaul and became stranded, along with its crew. So Mr. Wiweko decided to put together a charter operation to earn some money. He took the plane to Burma and hired it out flying Burmese troops and supplies into battle against rebellious

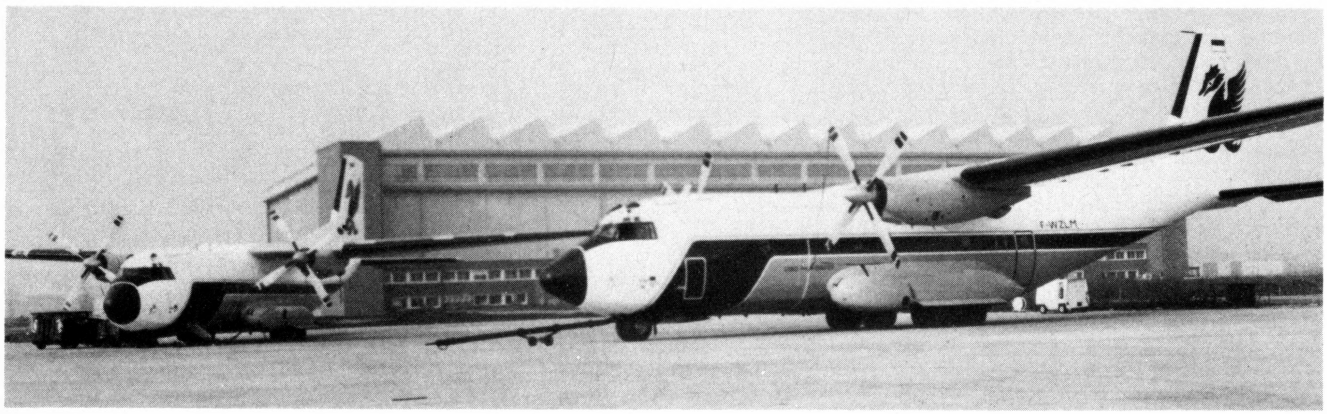
Nurtanio's other major product is the MBB NBO 105 helicopter. HH-1501 serves with the Indonesian A.F.; other NBO 105s have been delivered to the Navy and Army

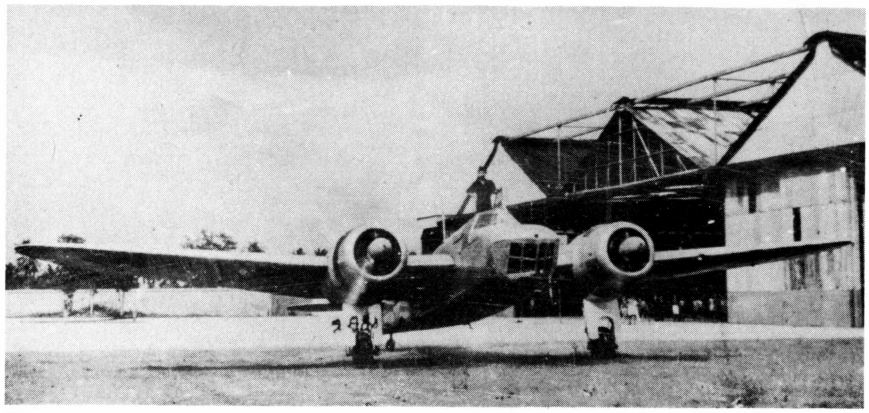


First illustration to be published of the ST-220 sport/trainer/utility aircraft, now nearing completion in a Jakarta shopping centre factory



Right: *Six Lockheed L-100-30 Hercules (PK-PLR illus.) have been ordered to date for use in Indonesia's transmigration programme, which will move more than a million people, mostly from Java, to less overcrowded parts of the Republic*
Below: *Indonesia has also ordered three new-generation Transall C-160NGs from Aérospatiale for the resettlement programme. The first was handed over at Toulouse on 9th February*





All that the Indonesian Armed Forces Museum staff know about this photo is that it shows a Bristol Blenheim re-engined with a pair of radials from a Japanese bomber. It is said to have crashed on landing after its first flight

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hill tribes. Later Mr. Wiweko and his crew ran arms to Indonesian independence fighters in Sumatra, beating a Dutch blockade.

"Within months Mr. Wiweko had raised enough money to buy two more Dakotas, pay the tuition for Indonesian cadet pilots studying abroad and support the country's diplomatic missions in Pakistan, India and Burma." Today he is President Director of the national airline, Garuda Indonesian Airways, which traces its origin back to that first Dakota. Anyone willing to pay for the highest standard of airline service will find it in the first-class cabin of Garuda's Boeing 747s. When low fares are essential for people like Muslim pilgrims bound for Mecca, it was Mr. Wiweko who proved that a 747 can carry 542 people without letting standards slip below what is acceptable. The total might well have been higher if Boeing had not replied with a startled "No" when asked if it would be practicable to install extra seats and lights in the cargo holds.

FFCC

More than for anything else, Mr. Wiweko will be remembered in the airline business as the father of the FFCC, the two-man forward-facing crew cockpit which Garuda was first in the world to introduce on wide-body jets, in the shape of its A300 Airbus transports. Even Boeing has been quick to adopt the idea as a standard feature of the new 767, at the expense of modifying aircraft already built.

People with financial minds view the FFCC as vindication of the long-contested claim that even the largest airliner needs only two crew, rather than three, to ensure the required standards of safe, efficient operation. Mr. Wiweko goes much further. To regard the FFCC as simply a means of dispensing with a flight engineer misses the point. It was experience as a pilot more than as an airline executive that suggested deleting the usual cockpit side panel and using CRT technology and colour-coded push-button selector/indicators to provide better and clearer information on forward and overhead panels. On Garuda's A300s the navigation and autopilot systems are digitalised, and the autopilot is authorised for use in automatic landings down to ICAO category II standards.

Few people doubt that the FFCC will become accepted as the norm for big jets, adding one more success to the aviation record of a nation that had not even achieved full sovereignty when the first flight of de Havilland's Comet heralded the age of jet travel.

Marine Pollution Control Unit

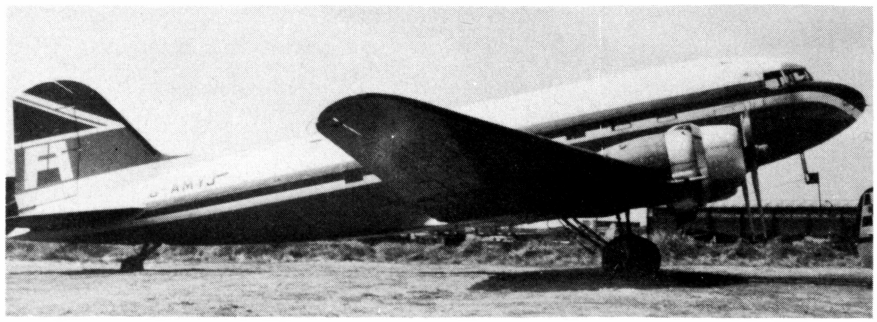
THE DEPARTMENT of Trade unveiled its Marine Pollution Control Unit (MPCU) at Southend Airport on 19th April. Eight aircraft managed by Harvest Air Ltd. will be based in pairs at four aerodromes in Britain. Two are already operational at Southend and Exeter and later this year it is planned to use West Freugh and Kinloss in Scotland.

Harvest Air are providing the D.o.T. with six Britten-Norman BN-2A Islanders and two Douglas DC-3s specially converted to spray dispersants at low level over the sea. The Islander will carry 1 ton of dispersant and the DC-3 5 tons. Spraying time will depend upon oil slick formation and the type of oil, but can be as low as 5 minutes for a full Islander load.

Four Islanders are in service (G-BADK, G-BJSA, G-BJWN and G-BJWP), all shown at Southend, and three later gave demonstrations along the sea front at Shoeburyness. The remaining Islanders will be available in a month or so, followed by Dakota 6 G-AMYJ (once used by Eastern Airways—see article in this issue) and another by the end of the year.

Cost to the Government for a full year when all aircraft are operational will be around £780,000.—*George W. Pennick.*

Above: *MPCU/Harvest Air Britten-Norman Islander G-BJWN giving an anti-pollution demonstration at Shoeburyness, Southend, on 19th April*
Below: *Douglas Dakota 6 G-AMYJ awaiting conversion to marine pollution spraying aircraft by Harvest Air at Southend, 19th April (Photos: George W. Pennick)*



Airlines of the World

by JOHN C. COOK

Metropolitan Airways Managing Director, Robin d'Erlanger (left), and Chairman, David Beety, in front of one of the airline's two D.H. Canada Twin Otters, G-BHFD

Metropolitan Airways Ltd.

Metropolitan Airways (Flight Code RD)

ON 29TH MARCH Metropolitan Airways Ltd., a new British regional airline, became operational from its base at Hurn Airport, Bournemouth. It succeeds Alderney Air Ferries, formed in the spring of 1979 by Mr. Ronald Ashley, who retains an interest in the new company. Alderney Air Ferries began flying in July 1979, linking Alderney with Bournemouth on a charter basis. In October 1980 the company was acquired by Robin d'Erlanger, the present managing director and son of former BOAC chairman Sir Gerard d'Erlanger. A scheduled service licence was awarded in November and a second Islander was added to allow its operation to begin on 1st January 1981. A third aircraft was acquired in July 1981, when the Bournemouth–Cherbourg and Alderney–Exeter routes were inaugurated. A Bournemouth–Gatwick link was established on 1st December 1981 with one return flight each weekday morning.

One of Alderney Air Ferries' directors at that time was solicitor David Beety (now chairman of Metropolitan and a director of British Caledonian's parent company, The Caledonian Aviation Group) and in November 1981 he and Robin d'Erlanger had set in motion plans to expand the airline, beginning talks with Dan-Air with a view to taking over the operation of the latter's domestic Link City services; these had been cut back on some routes to flights on just two days per week and were in some danger of complete closure. With smaller aircraft higher frequency services could be offered, to the advantage of passengers, and there were potential benefits for both airlines. Dan-Air, unable profitably to employ its Hawker Siddeley HS 748s and not anxious to buy smaller equipment, would retain feeder services into its main network and Alderney Air Ferries would have the benefit of the larger airline's marketing, sales and reservations facilities.

Agreement reached, equipment requirements were met by the purchase of two de Havilland Canada Twin Otter 300s from Loganair, the Canadian aircraft being preferred to the similar-sized Embraer Bandeirante not only for its much lower capital cost but also for its ability to carry a full 20-passenger payload over all the sectors to be flown. The operations base was moved to Hurn at the beginning of April and maintenance sub-contracted to Glos-Air.

Utilisation for the Twin Otters should be about 1,500 hours per annum for each aircraft. The rotation pattern is of interest. One aircraft is based at Bournemouth and one at Newcastle, both starting the day's operations at 0730. The northbound aircraft flies Bournemouth–Cardiff–Manchester–Newcastle (on Mondays, Wednesdays and Fridays, serving Birmingham instead of Cardiff on Tuesdays and Thursdays) and remains at Newcastle to return south at 1745. The southbound aircraft arrives at Bournemouth at 1030 and is thus available to fly Bournemouth–Cherbourg–Alderney–Bournemouth, leaving Bournemouth at 1140 and returning at 1345, and Bournemouth–Alderney–Cherbourg–Bournemouth, leaving Bournemouth at 1535 and returning at 1735 to fly the 1745 service back to Newcastle. Quick turn-rounds are a feature of this Bournemouth–Alderney–Cherbourg "triangle" which is flown by an Islander when load factors are appropriate. The smaller aircraft is also used for the Bournemouth–Gatwick service which, to capture the business traffic, has to be flown during the 0730–1000 period when the Twin Otters are engaged on the Link City services (the Gatwick service is currently scheduled at two return flights each weekday). Current plans envisage the sale of two of the three Britten-Norman Islanders and the later acquisition of a third Twin Otter.

Like the Islander, the Twin Otter is cleared for single-pilot operation but requires a cabin attendant with a full load of 20 passengers. Metropolitan has elected to employ six "flight officers", young graduates from Hamble, Oxford and Perth with 200–300 hours experience and a commercial pilot's licence with instrument rating. Their prime responsibility is for the safety and comfort of the passengers, but clearly they can assist the captain with such tasks as the radio and paperwork and, although not officially designated as co-pilots, their presence provides added passenger confidence.

Head Office: Bournemouth (Hurn) Airport, Christchurch, Dorset BH23 6DF. Telephone: 0202 476813. Telex: 418289.

Reg'n.	*Type*	*c/n.*	*Previous identity*
G-BCEN	BN-2A Islander	403	4X-AYG
G-BELS	DHC-6 Twin Otter 300	530	
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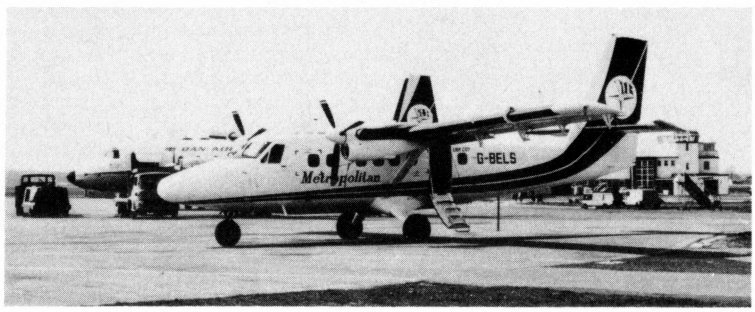
Left: *Metropolitan Islander G-BEOC, still wearing Alderney Air Ferries titles, at Hurn.* Right: *Twin Otter G-BELS (Photos: John C. Cook)*



Spanish A.F. Fokker F.27 Maritime, c/n. 10585, of Escuadrón 802 *returns to its base at Gando after a patrol (All photos: Fokker)*

"Good Samaritans" of the Eastern Atlantic

Spanish A.F. Fokker F.27 Maritime SAR operations from the Canaries

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During a visit to Gando "Focus" was able to discuss *Escuadrón 802*'s operations with officers and men of the unit and to fly on two missions. The impression gained was that of a highly efficient unit that takes pride in its work, that finds in that work a sense of satisfaction lacking in an aggressive or less humanitarian role, and that appreciates the virtues of the equipment it flies.

The squadron undertakes both civil and military SAR operations in the areas for which it is responsible. The unit is commanded by Lt.-Col. Eugenio Jack, an airman who has learnt to compartmentalise a heavy and varied programme of work within a strict timetable. He does so with an efficiency and concentration that clearly influence all ranks of the unit. After some 3,000 flight hours by his three F.27 Maritimes, his opinion of the aircraft was unequivocal: "It's a specialised aircraft for search and rescue and surveillance and it's very, very good for us."

His squadron spends some 40% of its time on search and rescue, 20% on surveillance and 20% on training. The Las Palmas base is the nerve centre of the squadron's Atlantic FIR, scene of most of No. 802's activity. Maritime traffic is heavy and includes many ships bound for the Middle and Far East via the Cape of Good Hope, and others heading for the Pacific.

Sickness or casualties on board bring frequent appeals for help. In these cases the task of the F.27 Maritime allocated to the operation is to locate the ship and, in collaboration with the Rescue and Co-ordination Centre (RCC) in Las Palmas, direct a rescue helicopter to the spot.

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There are also many calls from fishing vessels in distress, not only in local waters but also in the rich fishing grounds off the coast of West Africa. Tides are strong and it is not unusual for a fishing boat that has lost power to drift a considerable distance from the position originally reported. In this case the aircraft goes into one of the standard search patterns and normally has little difficulty in finding the vessel with the aid of its Litton AN/APS-504(V)-2 search radar. The new position is then reported to the naval rescue service.

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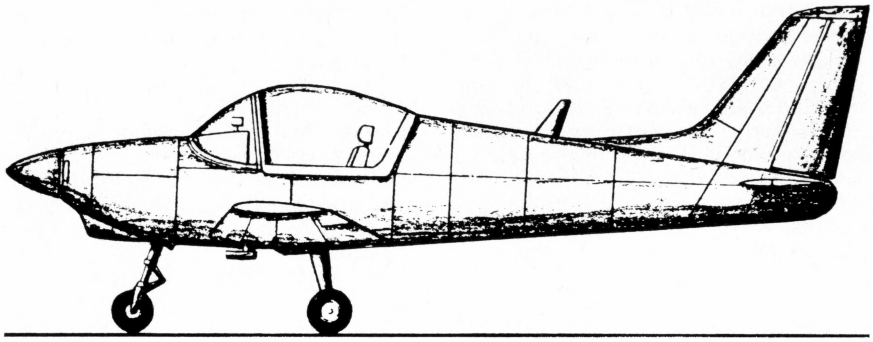
eight-seat passenger/cargo transport, powered by two 250-h.p. Avco Lycoming IO-540 engines and looking something like an Islander with a rear loading ramp. Construction of the prototype had to be suspended when funds ran low, but the "factory" has never run out of steam. At the time of my visit, work was under way on a variety of full-size aircraft, including a Spencer Air Car amphibian, an interesting own-design microlight, and the prototype of an all-metal side-by-side two-seat sporting/training aircraft designated ST-220, which is expected to fly soon.

At this stage of aviation development in Indonesia a handful of individuals can still influence all that is done, on the basis of personal experience and charisma. Air Marshal Nurtanio, Air Vice-Marshal Salatun, Dipl.-Ing. Suharto, and Prof. Dr.-Ing. B. J. Habibie, President Director of Nurtanio Aircraft Industry, were and are such men, and this brings us back to the first person mentioned in this brief survey—Wiweko Soepono.

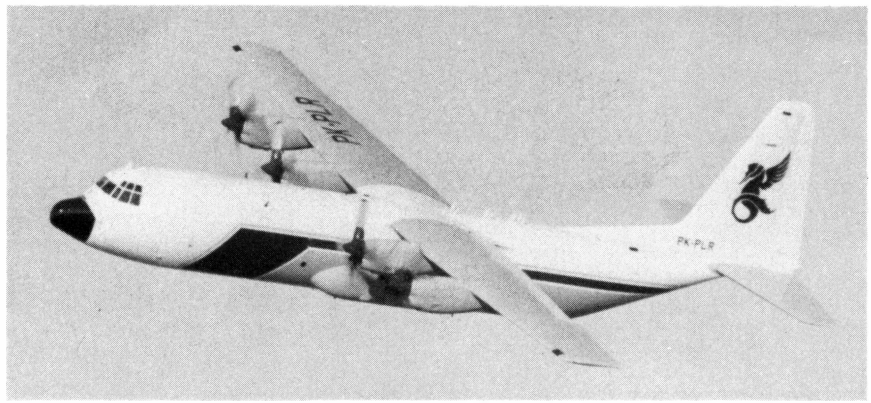
Wiweko

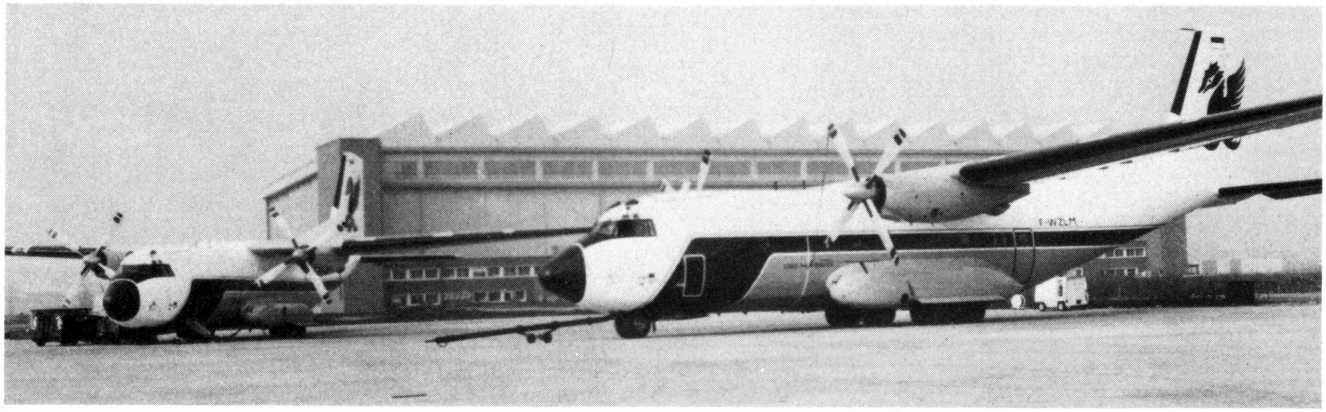
An article in the *Asian Wall Street Journal* told how "In 1948, with the country divided between Indonesian and Dutch-held enclaves, Mr. Wiweko, then 25, drew the assignment of buying the first aeroplane for the Republic's air force. The funds were raised in cash and gold by patriotic Sumatran merchants. When, in December, the Dutch attacked the republican capital of Yogyakarta, the plane, a C-47 Dakota, was in Calcutta for an overhaul and became stranded, along with its crew. So Mr. Wiweko decided to put together a charter operation to earn some money. He took the plane to Burma and hired it out flying Burmese troops and supplies into battle against rebellious

Nurtanio's other major product is the MBB NBO 105 helicopter. HH-1501 serves with the Indonesian A.F.; other NBO 105s have been delivered to the Navy and Army

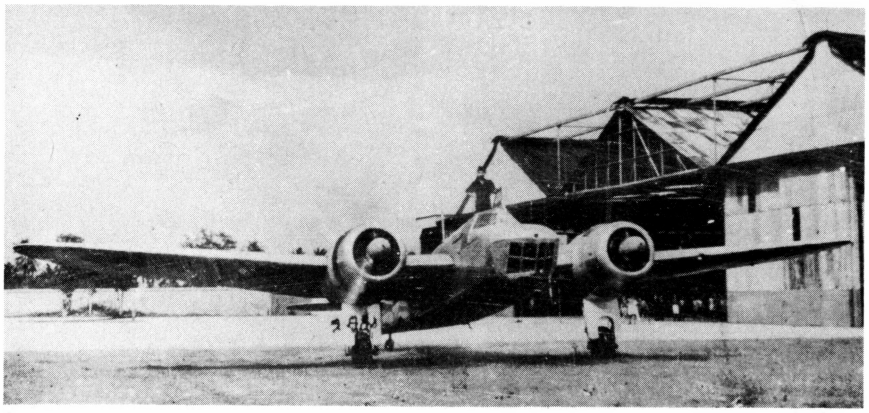


First illustration to be published of the ST-220 sport/trainer/utility aircraft, now nearing completion in a Jakarta shopping centre factory





Right: *Six Lockheed L-100-30 Hercules (PK-PLR illus.) have been ordered to date for use in Indonesia's transmigration programme, which will move more than a million people, mostly from Java, to less overcrowded parts of the Republic*
Below: *Indonesia has also ordered three new-generation Transall C-160NGs from Aérospatiale for the resettlement programme. The first was handed over at Toulouse on 9th February*



All that the Indonesian Armed Forces Museum staff know about this photo is that it shows a Bristol Blenheim re-engined with a pair of radials from a Japanese bomber. It is said to have crashed on landing after its first flight

Indonesian Odyssey . . .

hill tribes. Later Mr. Wiweko and his crew ran arms to Indonesian independence fighters in Sumatra, beating a Dutch blockade.

"Within months Mr. Wiweko had raised enough money to buy two more Dakotas, pay the tuition for Indonesian cadet pilots studying abroad and support the country's diplomatic missions in Pakistan, India and Burma." Today he is President Director of the national airline, Garuda Indonesian Airways, which traces its origin back to that first Dakota. Anyone willing to pay for the highest standard of airline service will find it in the first-class cabin of Garuda's Boeing 747s. When low fares are essential for people like Muslim pilgrims bound for Mecca, it was Mr. Wiweko who proved that a 747 can carry 542 people without letting standards slip below what is acceptable. The total might well have been higher if Boeing had not replied with a startled "No" when asked if it would be practicable to install extra seats and lights in the cargo holds.

FFCC

More than for anything else, Mr. Wiweko will be remembered in the airline business as the father of the FFCC, the two-man forward-facing crew cockpit which Garuda was first in the world to introduce on wide-body jets, in the shape of its A300 Airbus transports. Even Boeing has been quick to adopt the idea as a standard feature of the new 767, at the expense of modifying aircraft already built.

People with financial minds view the FFCC as vindication of the long-contested claim that even the largest airliner needs only two crew, rather than three, to ensure the required standards of safe, efficient operation. Mr. Wiweko goes much further. To regard the FFCC as simply a means of dispensing with a flight engineer misses the point. It was experience as a pilot more than as an airline executive that suggested deleting the usual cockpit side panel and using CRT technology and colour-coded push-button selector/indicators to provide better and clearer information on forward and overhead panels. On Garuda's A300s the navigation and autopilot systems are digitalised, and the autopilot is authorised for use in automatic landings down to ICAO category II standards.

Few people doubt that the FFCC will become accepted as the norm for big jets, adding one more success to the aviation record of a nation that had not even achieved full sovereignty when the first flight of de Havilland's Comet heralded the age of jet travel.

Marine Pollution Control Unit

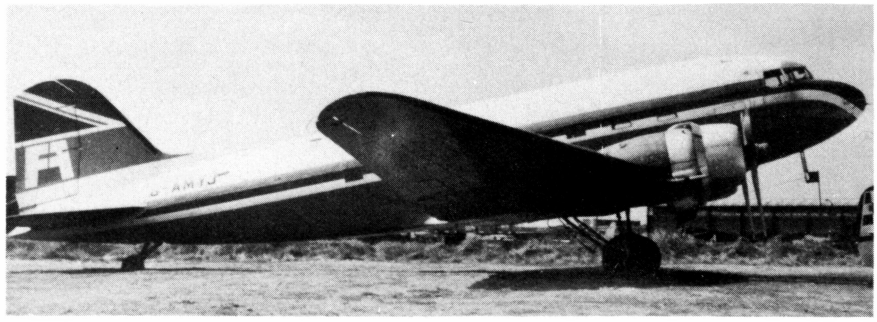
THE DEPARTMENT of Trade unveiled its Marine Pollution Control Unit (MPCU) at Southend Airport on 19th April. Eight aircraft managed by Harvest Air Ltd. will be based in pairs at four aerodromes in Britain. Two are already operational at Southend and Exeter and later this year it is planned to use West Freugh and Kinloss in Scotland.

Harvest Air are providing the D.o.T. with six Britten-Norman BN-2A Islanders and two Douglas DC-3s specially converted to spray dispersants at low level over the sea. The Islander will carry 1 ton of dispersant and the DC-3 5 tons. Spraying time will depend upon oil slick formation and the type of oil, but can be as low as 5 minutes for a full Islander load.

Four Islanders are in service (G-BADK, G-BJSA, G-BJWN and G-BJWP), all shown at Southend, and three later gave demonstrations along the sea front at Shoeburyness. The remaining Islanders will be available in a month or so, followed by Dakota 6 G-AMYJ (once used by Eastern Airways—see article in this issue) and another by the end of the year.

Cost to the Government for a full year when all aircraft are operational will be around £780,000.—*George W. Pennick.*

Above: *MPCU/Harvest Air Britten-Norman Islander G-BJWN giving an anti-pollution demonstration at Shoeburyness, Southend, on 19th April*
Below: *Douglas Dakota 6 G-AMYJ awaiting conversion to marine pollution spraying aircraft by Harvest Air at Southend, 19th April (Photos: George W. Pennick)*



Airlines of the World

by JOHN C. COOK

Metropolitan Airways Managing Director, Robin d'Erlanger (left), and Chairman, David Beety, in front of one of the airline's two D.H. Canada Twin Otters, G-BHFD

Metropolitan Airways Ltd.

Metropolitan Airways (Flight Code RD)

ON 29TH MARCH Metropolitan Airways Ltd., a new British regional airline, became operational from its base at Hurn Airport, Bournemouth. It succeeds Alderney Air Ferries, formed in the spring of 1979 by Mr. Ronald Ashley, who retains an interest in the new company. Alderney Air Ferries began flying in July 1979, linking Alderney with Bournemouth on a charter basis. In October 1980 the company was acquired by Robin d'Erlanger, the present managing director and son of former BOAC chairman Sir Gerard d'Erlanger. A scheduled service licence was awarded in November and a second Islander was added to allow its operation to begin on 1st January 1981. A third aircraft was acquired in July 1981, when the Bournemouth–Cherbourg and Alderney–Exeter routes were inaugurated. A Bournemouth–Gatwick link was established on 1st December 1981 with one return flight each weekday morning.

One of Alderney Air Ferries' directors at that time was solicitor David Beety (now chairman of Metropolitan and a director of British Caledonian's parent company, The Caledonian Aviation Group) and in November 1981 he and Robin d'Erlanger had set in motion plans to expand the airline, beginning talks with Dan-Air with a view to taking over the operation of the latter's domestic Link City services; these had been cut back on some routes to flights on just two days per week and were in some danger of complete closure. With smaller aircraft higher frequency services could be offered, to the advantage of passengers, and there were potential benefits for both airlines. Dan-Air, unable profitably to employ its Hawker Siddeley HS 748s and not anxious to buy smaller equipment, would retain feeder services into its main network and Alderney Air Ferries would have the benefit of the larger airline's marketing, sales and reservations facilities.

Agreement reached, equipment requirements were met by the purchase of two de Havilland Canada Twin Otter 300s from Loganair, the Canadian aircraft being preferred to the similar-sized Embraer Bandeirante not only for its much lower capital cost but also for its ability to carry a full 20-passenger payload over all the sectors to be flown. The operations base was moved to Hurn at the beginning of April and maintenance sub-contracted to Glos-Air.

Utilisation for the Twin Otters should be about 1,500 hours per annum for each aircraft. The rotation pattern is of interest. One aircraft is based at Bournemouth and one at Newcastle, both starting the day's operations at 0730. The northbound aircraft flies Bournemouth–Cardiff–Manchester–Newcastle (on Mondays, Wednesdays and Fridays, serving Birmingham instead of Cardiff on Tuesdays and Thursdays) and remains at Newcastle to return south at 1745. The southbound aircraft arrives at Bournemouth at 1030 and is thus available to fly Bournemouth–Cherbourg–Alderney–Bournemouth, leaving Bournemouth at 1140 and returning at 1345, and Bournemouth–Alderney–Cherbourg–Bournemouth, leaving Bournemouth at 1535 and returning at 1735 to fly the 1745 service back to Newcastle. Quick turn-rounds are a feature of this Bournemouth–Alderney–Cherbourg "triangle" which is flown by an Islander when load factors are appropriate. The smaller aircraft is also used for the Bournemouth–Gatwick service which, to capture the business traffic, has to be flown during the 0730–1000 period when the Twin Otters are engaged on the Link City services (the Gatwick service is currently scheduled at two return flights each weekday). Current plans envisage the sale of two of the three Britten-Norman Islanders and the later acquisition of a third Twin Otter.

Like the Islander, the Twin Otter is cleared for single-pilot operation but requires a cabin attendant with a full load of 20 passengers. Metropolitan has elected to employ six "flight officers", young graduates from Hamble, Oxford and Perth with 200–300 hours experience and a commercial pilot's licence with instrument rating. Their prime responsibility is for the safety and comfort of the passengers, but clearly they can assist the captain with such tasks as the radio and paperwork and, although not officially designated as co-pilots, their presence provides added passenger confidence.

Head Office: Bournemouth (Hurn) Airport, Christchurch, Dorset BH23 6DF. Telephone: 0202 476813. Telex: 418289.

Reg'n.	*Type*	*c/n.*	*Previous identity*
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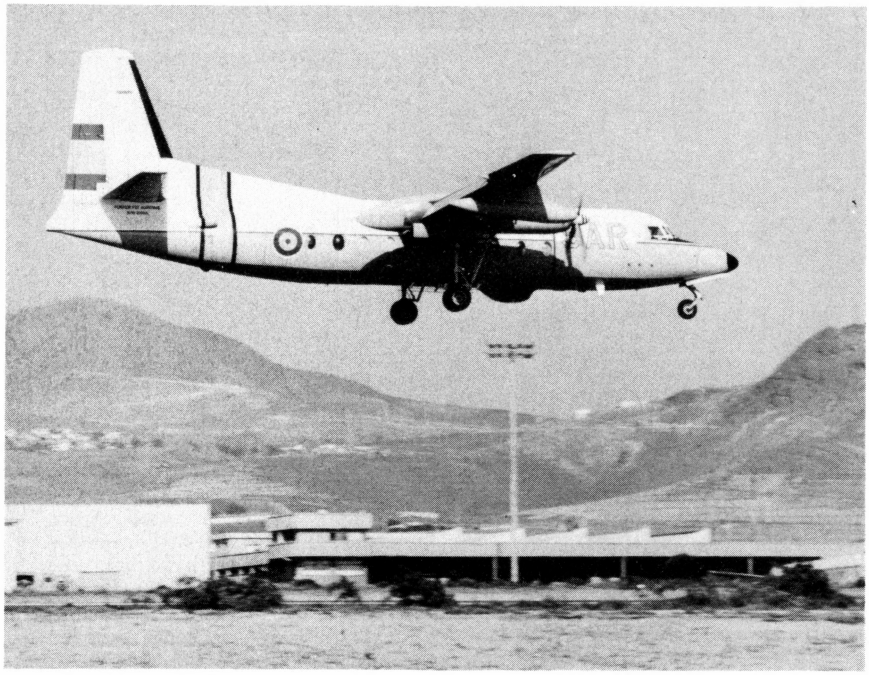

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Strong tides

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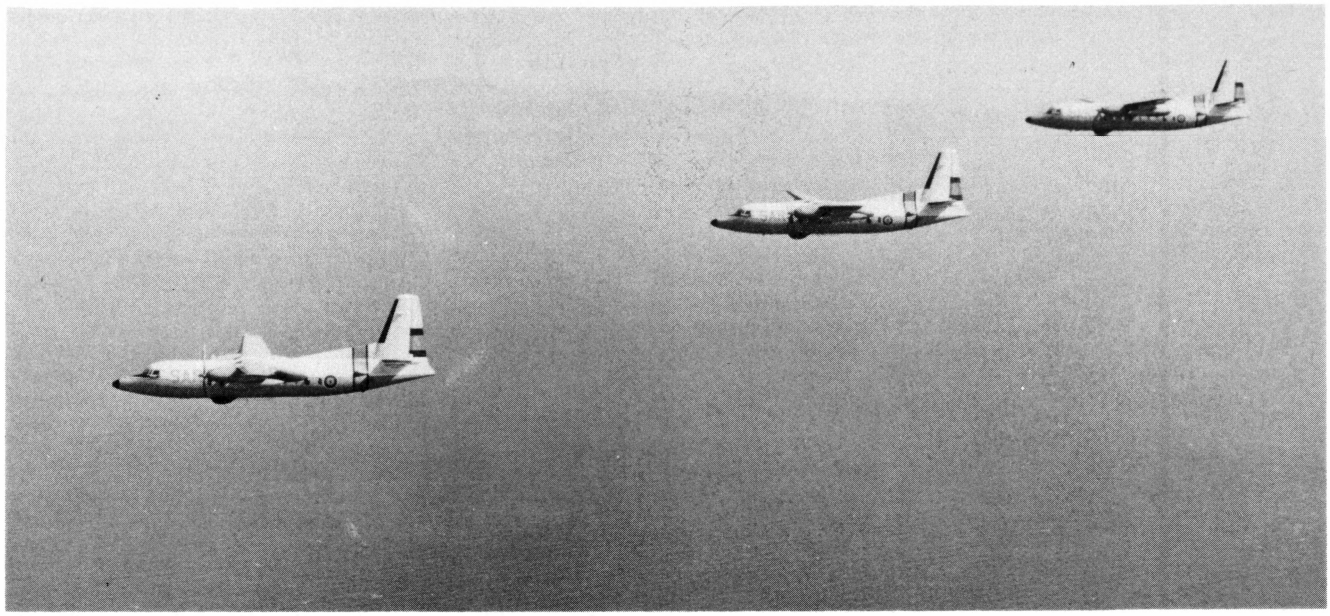

All three of Escuadrón 802*'s F.27 Maritimes in formation over the Atlantic with the coastline of Gran Canaria in the background*

Above: *The F.27 Maritimes outside their hangar at Gando Airport, Las Palmas. On 8th March this year* Escuadrón 802 *was presented with a plaque by Fokker to commemorate the completion of the three aircraft's first 5,000 flying hours*

Below Left: *Flight deck view of a fishing vessel during a patrol between Gran Canaria and Lanzarote.* Right: *Operators and observers at work. The navigator/TACCO (Tactical Co-ordinator) is in the foreground with the radar operator on his right*

Direct-view window in the flight deck. From this position the pilot is often the first to spot an object in the water

"Good Samaritans" . . .

altitude, which means we get there quickly, comfortably above the weather, and save fuel at the same time. And that's especially useful if we're on a surveillance mission and have to spend some time in the area."

Low-altitude flying

Good performance at the lower end of the speed range is also important. *Escuadrón 802* appreciates the aircraft's ability to fly really slowly at very low altitude, permitting thorough visual search. And the recent increase of the aircraft's permissible maximum take-off weight from 45,000 to 47,500 lb. for the maritime surveillance role is greatly appreciated.

Col. Jack was in fact one of the most enthusiastic protagonists of the increase: "You need the extra weight. When you're going on a long-distance mission and you're going to fly 10 or 11 hours, the operators and observers need to rest regularly, so you need ten people—a double crew—aboard and full tanks and you need the 16,300 lb. maximum fuel load. Especially if the weather is bad for then you always have to allow for 45 minutes' flying to an alternative field."

Col. Jack is also enthusiastic about the interface between the Litton Inertial Navigation System and the autopilot and the improved efficiency which it confers on the pilot and through him on the effectiveness of the mission. "To fly an aircraft for anything up to six hours at 300 to 600 ft. is a strain on any pilot. But when you only have to check the aircraft there's no problem. The INS and autopilot working together, plus the safeguard of the aircraft's low-altitude warning system, relieve you of all the work involved in manoeuvring and flying the search patterns. It's the best advantage the aircraft offers because you can look for the people or whatever it is you're seeking and all you have to do apart from that is to check the fuel, check the engines and adjust speed as necessary. After that you're an active member of the observation crew. And the result is that the pilot is usually the first to spot the object in the water."

First concern

And that, Col. Jack insists, is just the start of the job. "My first concern is to get people out of the water," he says. "People in normal health can survive up to six hours in the water—some can even go on for four to five days. But my aim is to get them out of the water and into a dinghy as quickly as possible. Then they're safe and everybody knows where they are."

The squadron works in close co-operation with the International Red Cross organisation and, as Col. Jack puts it, "with everyone who wants to help other people. Apart from the RCC at Las Palmas, Spain has two others, at Madrid and Palma, Majorca respectively—and there is a sound working relationship with others in France and Italy. Regular European exercises are held in other than Spanish waters and there's a pleasure in being in the air and engaged on that particular kind of task. It's a special feeling that only a pilot can know."

But "Focus" was able to experience something of the excitement of a mission when flying on a training flight from Las Palmas to the northern island of Lanzarote. Throughout most of the mission, which lasted 2 hours and 10 minutes, the aircraft flew at about 200 ft., making it the longest period that the writer had ever spent while flying in such close proximity to the sea. As it happened, on that particular day, most of the "blips" on the cockpit radar screen were small. The first vessel overflown was a rather nondescript type that suggested John Masefield's British coaster and its cargo of old tin trays.

But the next blip to show was substantial and right ahead. It was in fact a tanker, 100 n.m. away at the time of the first appearance on the radar screen—a very creditable performance by the Litton search radar, albeit in ideal conditions. Shortly afterwards it came into view, a tanker as huge as the blip had suggested, gleaming white against the dark blue of the Atlantic, with a few crew on deck clearly puzzled at the close interest manifested by an F.27 Maritime making two or three passes at little more than 50 ft.

Major Joaquin Hevia, who was in the left-hand seat, explained that the aircraft was automatically executing a ladder pattern when the tanker was sighted. "But then I broke off and flew over the tanker to identify it. Then I switched back to autopilot and—as you saw—the aircraft turned and went back to the pattern, resuming at the nearest point."

The mission also presented an opportunity to observe the importance of the ample crew rest area forward of the operators' stations. With nine air force personnel aboard and a great deal of concentrated observation duty, there was a measure of crew rotation during the flight; the men taking a break clearly appreciated the comfort and spaciousness of the F.27 Maritime's rest facilities.

Aircraft, helicopter collaborate

On a second mission next day there was an opportunity to observe an aircraft/helicopter collaborative dummy run. For this purpose the F.27 Maritime's rear left-hand door was opened

Escuadrón 802*'s F.27 Maritimes on the apron at Gando—c/n. 10587 in foreground*

The first of three Fokker F.27 Maritimes which the Philippine A.F. has been operating since February 1981. They are used for a variety of tasks including coastal surveillance, counter-infiltration, offshore installation control, fishery protection and search and rescue.

Other operators of the F.27 Maritime include the Peruvian Navy (2), Angolan A.F. (1) and Netherlands (2). The two Dutch aircraft equip No. 336 Squadron, a joint Navy/A.F. unit based at Curaçao in the West Indies

and a large yellow tyre-like tube, that in Spanish A.F. training serves to represent a dinghy, was dropped or rather pushed out.

The virtually horizontal path of the tube as it flashed backwards in the slipstream before arcing down to the sea was sufficient to stress the comfortable clearance of the horizontal stabiliser. At the same time a smoke marker was dropped through the launcher tube and the spot further indicated by a dye marker.

When, within minutes as it seemed, the Agusta-Bell AB.205 helicopter arrived from Gando, the dye had spread to form a bright and highly visible light green patch on the sea's surface and smoke was belching copiously from the marker. Picking up the tube proved a difficult and somewhat protracted exercise, using a kind of hook or grab lowered by the helicopter winch.

"It's much easier", commented Major Hevia, "to winch a man out of a dinghy or from the sea than it is to pick up a tube. But the difficulties are good experience for the pilot in manoeuvring and positioning."

The tube also offered good radar training, he added. Dropped by an aircraft in a rough sea it could drift for up to 20 miles before a second aircraft came along to look for it a couple of hours later. Being so much smaller than a dinghy it was not easily identifiable on a radar screen amid all the clutter created by waves perhaps up to 10 metres high. A crew that could detect and locate a tube in those conditions would find it much easier to "localise" a dinghy.

Dinghy stowage

One slight change which the squadron had incorporated in the aircraft, Major Hevia added, was to enlarge the rear stowage accommodation for dinghies. They were now able to stow three, each capable of holding thirty people so that in one sortie a single F.27 Maritime could provide safety for nearly 100 survivors.

In this context, a feature of No. 802's dinghies is that each has attached to it a 200-m. line made buoyant by floats. The technique employed is to drop the dinghy upwind so that its lifeline floats free and drifts towards the survivors in the water, enabling them to haul themselves to the dinghy. Another addition made by the squadron is the installation of a Morse key which can be useful when conditions are too severe to permit satisfactory verbal HF communication.

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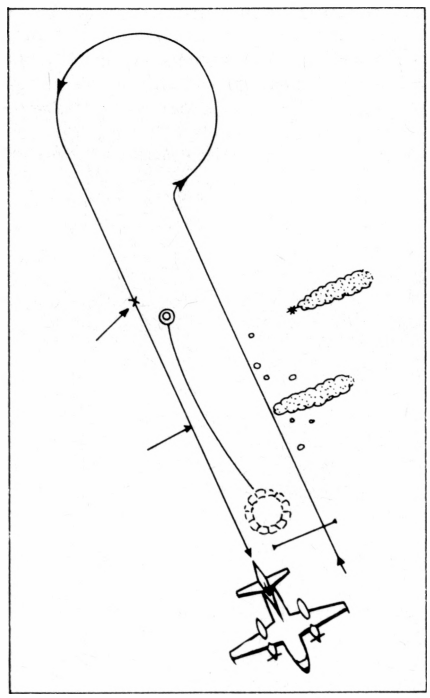

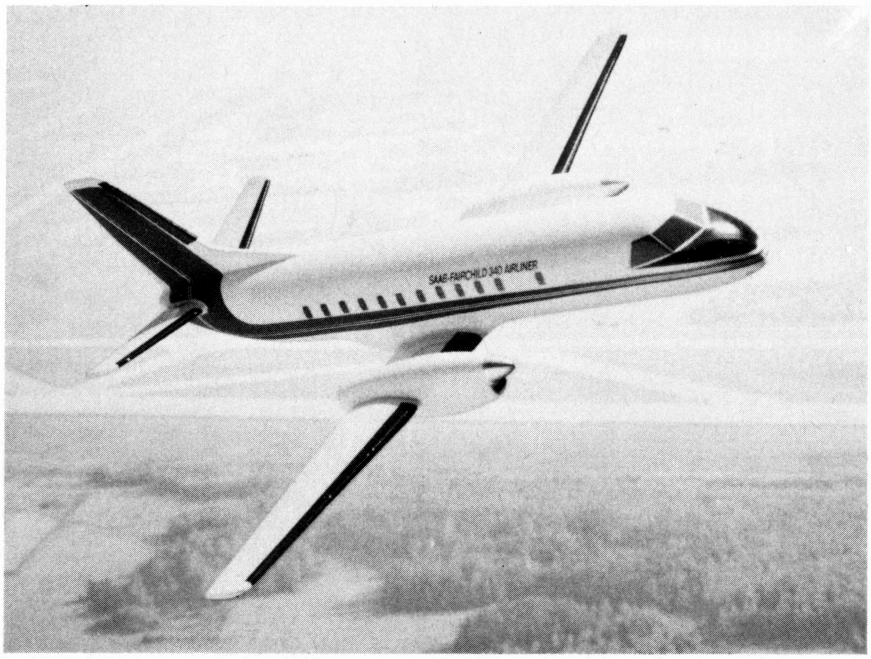

Impression of the SAAB-Fairchild 340 which is scheduled to fly early next year

SAAB-Fairchild 340

Progress report by M. J. HOOKS

PRODUCTION OF the SAAB-Fairchild 340 34-passenger twin-turboprop regional airliner is now in full swing at SAAB's Linköping factory in Sweden and the Fairchild Republic plant at Long Island, New York. To show how far the programme has advanced SAAB recently invited a party of journalists (the author included) to Linköping. We flew from Gatwick in Dan-Air's new cargo-door Hawker Siddeley HS 748 G-BIUV.

The 340 was born in June 1979 when SAAB-Scania and Fairchild signed an initial agreement to conduct joint feasibility studies. In January 1980 it was decided to go ahead with the project definition phase. Engine selection followed in June 1980 and two months later a joint marketing company, SAAB-Fairchild HB, was formed for non-American markets.

September 1980 marked the end of the project definition phase, when agreement was reached for full go-ahead on joint design, development, production and marketing; in November the first customer contract was announced and the following month SAAB-Scania decided to build a new plant for the production of civil aircraft.

By June 1981 orders for more than a hundred 340s had been announced; in August the first part of the new factory was opened and fuselage and wing assembly was under way by November 1981.

In his welcoming address to the Press, SAAB-Scania Aerospace Division's Chief Executive, Tore Gullstrand, said that his company had a large investment in the programme and intended to remain in the civil aircraft field (it will be remembered that SAAB's previous transport aircraft was the Scandia, built over thirty years ago). Inevitably the 340 design would be stretched, he said, and SAAB were studying large economical turboprop transports for the 1990s.

Outlining the company's other activities, Mr. Gullstrand mentioned that a long-range surface-to-surface sea missile was under development, work on space products had been under way for fifteen years and recent expansion of these activities included work on Sweden's first research satellite, the Viking, for which SAAB-Scania has become the principal contractor. Definition of a Viggen replacement—the SAAB 2105 JAS—for the 1990s continues and the Swedish Government had recently given its approval to the initial stage of development.

Production of the SAAB-Fairchild 340 is being undertaken in this new factory which SAAB built at Linköping and which was completed in March 1982

Fuel-efficient

Ulf Edlund, Chief Engineer, Future Developments, described the 340 as an extremely fuel-efficient 34-seater, citing as the necessity of this the increase in fuel costs from 54 cents a gallon in 1978 to 100 cents in 1980. "Overall fuel efficiency was one of the main design criteria", he said. Other important requirements were a "stand-up" cabin with sea-level pressure always (7 p.s.i. in the case of the 340), a flexible interior layout and growth potential.

Performance specifications included a 3,600 ft. (1,100 m.) field requirement, 260 kt. (480 km./h.) maximum cruise, range of four 105 nautical mile (193 km.) stages, or a 175 n.m. (320 km.) range "hot and high". Direct operating costs with fuel at $1 per U.S. gallon are as follows (figures in brackets show costs at $2 per U.S. gallon): fuel 24% (38%); maintenance 27% (22%); depreciation 30% (25%) and crew 19% (15%).

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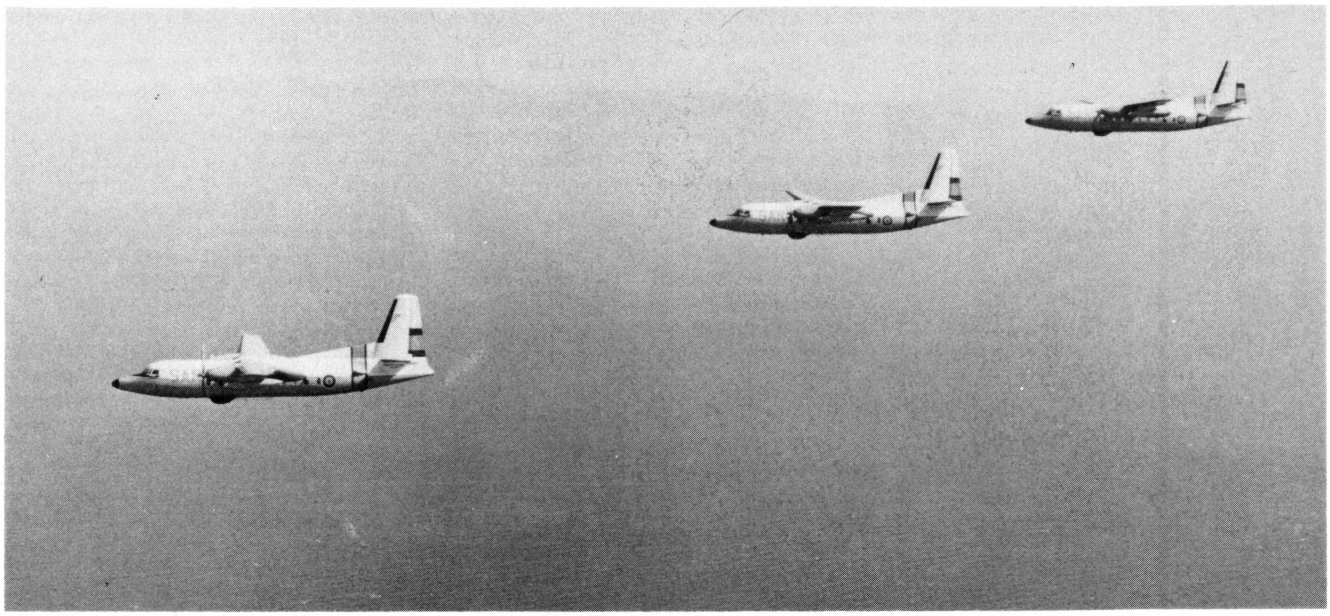

All three of Escuadrón 802*'s F.27 Maritimes in formation over the Atlantic with the coastline of Gran Canaria in the background*

Above: *The F.27 Maritimes outside their hangar at Gando Airport, Las Palmas. On 8th March this year* Escuadrón 802 *was presented with a plaque by Fokker to commemorate the completion of the three aircraft's first 5,000 flying hours*

Below Left: *Flight deck view of a fishing vessel during a patrol between Gran Canaria and Lanzarote.* Right: *Operators and observers at work. The navigator/TACCO (Tactical Co-ordinator) is in the foreground with the radar operator on his right*

Direct-view window in the flight deck. From this position the pilot is often the first to spot an object in the water

"Good Samaritans" . . .

altitude, which means we get there quickly, comfortably above the weather, and save fuel at the same time. And that's especially useful if we're on a surveillance mission and have to spend some time in the area."

Low-altitude flying

Good performance at the lower end of the speed range is also important. *Escuadrón 802* appreciates the aircraft's ability to fly really slowly at very low altitude, permitting thorough visual search. And the recent increase of the aircraft's permissible maximum take-off weight from 45,000 to 47,500 lb. for the maritime surveillance role is greatly appreciated.

Col. Jack was in fact one of the most enthusiastic protagonists of the increase: "You need the extra weight. When you're going on a long-distance mission and you're going to fly 10 or 11 hours, the operators and observers need to rest regularly, so you need ten people—a double crew—aboard and full tanks and you need the 16,300 lb. maximum fuel load. Especially if the weather is bad for then you always have to allow for 45 minutes' flying to an alternative field."

Col. Jack is also enthusiastic about the interface between the Litton Inertial Navigation System and the autopilot and the improved efficiency which it confers on the pilot and through him on the effectiveness of the mission. "To fly an aircraft for anything up to six hours at 300 to 600 ft. is a strain on any pilot. But when you only have to check the aircraft there's no problem. The INS and autopilot working together, plus the safeguard of the aircraft's low-altitude warning system, relieve you of all the work involved in manoeuvring and flying the search patterns. It's the best advantage the aircraft offers because you can look for the people or whatever it is you're seeking and all you have to do apart from that is to check the fuel, check the engines and adjust speed as necessary. After that you're an active member of the observation crew. And the result is that the pilot is usually the first to spot the object in the water."

First concern

And that, Col. Jack insists, is just the start of the job. "My first concern is to get people out of the water," he says. "People in normal health can survive up to six hours in the water—some can even go on for four to five days. But my aim is to get them out of the water and into a dinghy as quickly as possible. Then they're safe and everybody knows where they are."

The squadron works in close co-operation with the International Red Cross organisation and, as Col. Jack puts it, "with everyone who wants to help other people. Apart from the RCC at Las Palmas, Spain has two others, at Madrid and Palma, Majorca respectively—and there is a sound working relationship with others in France and Italy. Regular European exercises are held in other than Spanish waters and there's a pleasure in being in the air and engaged on that particular kind of task. It's a special feeling that only a pilot can know."

But "Focus" was able to experience something of the excitement of a mission when flying on a training flight from Las Palmas to the northern island of Lanzarote. Throughout most of the mission, which lasted 2 hours and 10 minutes, the aircraft flew at about 200 ft., making it the longest period that the writer had ever spent while flying in such close proximity to the sea. As it happened, on that particular day, most of the "blips" on the cockpit radar screen were small. The first vessel overflown was a rather nondescript type that suggested John Masefield's British coaster and its cargo of old tin trays.

But the next blip to show was substantial and right ahead. It was in fact a tanker, 100 n.m. away at the time of the first appearance on the radar screen—a very creditable performance by the Litton search radar, albeit in ideal conditions. Shortly afterwards it came into view, a tanker as huge as the blip had suggested, gleaming white against the dark blue of the Atlantic, with a few crew on deck clearly puzzled at the close interest manifested by an F.27 Maritime making two or three passes at little more than 50 ft.

Major Joaquin Hevia, who was in the left-hand seat, explained that the aircraft was automatically executing a ladder pattern when the tanker was sighted. "But then I broke off and flew over the tanker to identify it. Then I switched back to autopilot and—as you saw—the aircraft turned and went back to the pattern, resuming at the nearest point."

The mission also presented an opportunity to observe the importance of the ample crew rest area forward of the operators' stations. With nine air force personnel aboard and a great deal of concentrated observation duty, there was a measure of crew rotation during the flight; the men taking a break clearly appreciated the comfort and spaciousness of the F.27 Maritime's rest facilities.

Aircraft, helicopter collaborate

On a second mission next day there was an opportunity to observe an aircraft/helicopter collaborative dummy run. For this purpose the F.27 Maritime's rear left-hand door was opened

Escuadrón 802's *F.27 Maritimes on the apron at Gando—c/n. 10587 in foreground*

The first of three Fokker F.27 Maritimes which the Philippine A.F. has been operating since February 1981. They are used for a variety of tasks including coastal surveillance, counter-infiltration, offshore installation control, fishery protection and search and rescue.

Other operators of the F.27 Maritime include the Peruvian Navy (2), Angolan A.F. (1) and Netherlands (2). The two Dutch aircraft equip No. 336 Squadron, a joint Navy/A.F. unit based at Curaçao in the West Indies

and a large yellow tyre-like tube, that in Spanish A.F. training serves to represent a dinghy, was dropped or rather pushed out.

The virtually horizontal path of the tube as it flashed backwards in the slipstream before arcing down to the sea was sufficient to stress the comfortable clearance of the horizontal stabiliser. At the same time a smoke marker was dropped through the launcher tube and the spot further indicated by a dye marker.

When, within minutes as it seemed, the Agusta-Bell AB.205 helicopter arrived from Gando, the dye had spread to form a bright and highly visible light green patch on the sea's surface and smoke was belching copiously from the marker. Picking up the tube proved a difficult and somewhat protracted exercise, using a kind of hook or grab lowered by the helicopter winch.

"It's much easier", commented Major Hevia, "to winch a man out of a dinghy or from the sea than it is to pick up a tube. But the difficulties are good experience for the pilot in manoeuvring and positioning."

The tube also offered good radar training, he added. Dropped by an aircraft in a rough sea it could drift for up to 20 miles before a second aircraft came along to look for it a couple of hours later. Being so much smaller than a dinghy it was not easily identifiable on a radar screen amid all the clutter created by waves perhaps up to 10 metres high. A crew that could detect and locate a tube in those conditions would find it much easier to "localise" a dinghy.

Dinghy stowage

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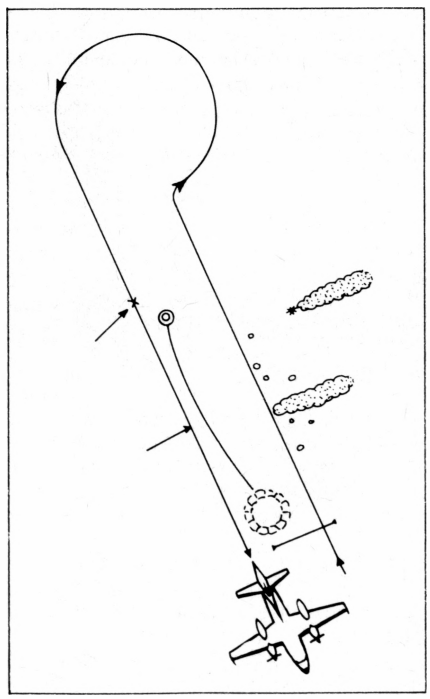

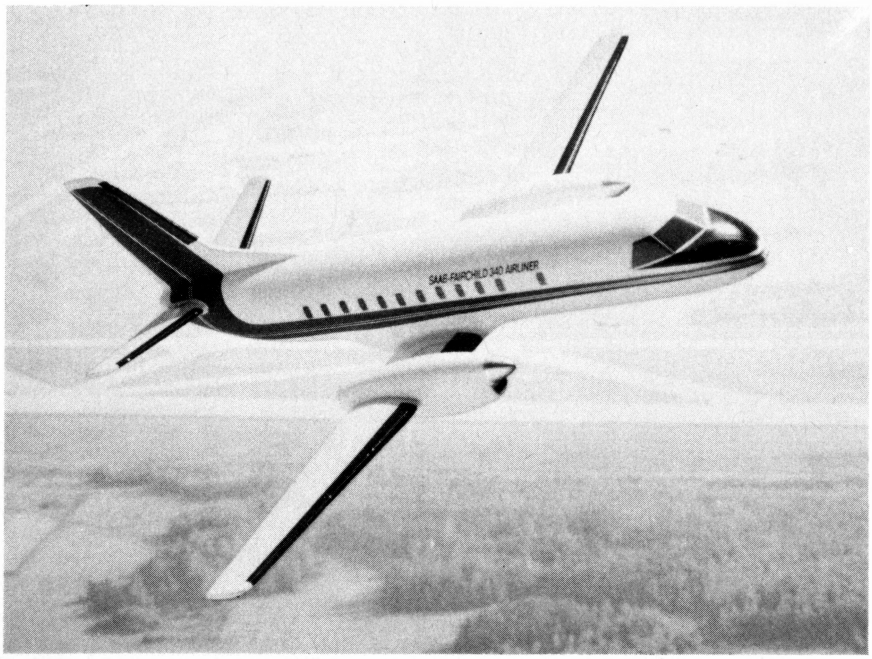

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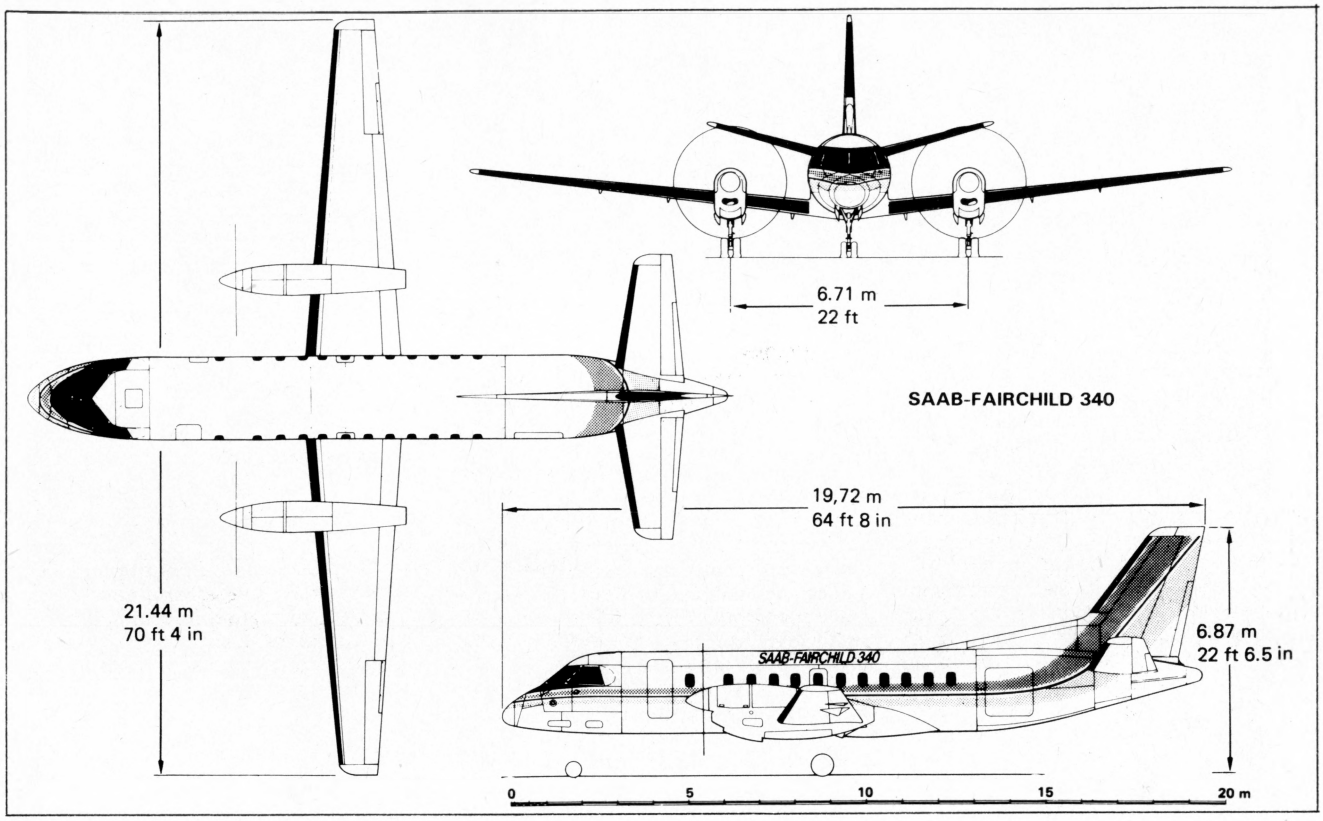


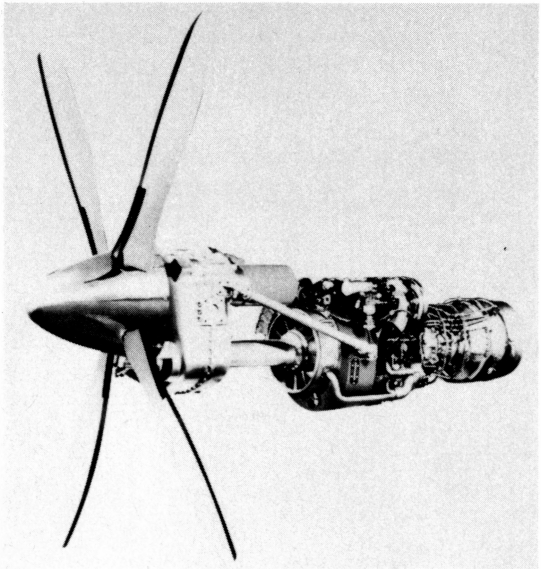
Assembly of the first test aircraft began in 1981 and roll-out is scheduled for October 1982 with flight testing beginning early in 1983. A second flight test airframe will follow a few months later and the total flight test programme will cover 950 hours using these and the first production aircraft; one static test airframe will also be built. First production flight tests begin in mid-1983 with certification and first deliveries scheduled for the first quarter of 1984. Complete assembly of the 340 will take place at Linköping which has better flight test facilities than New York.

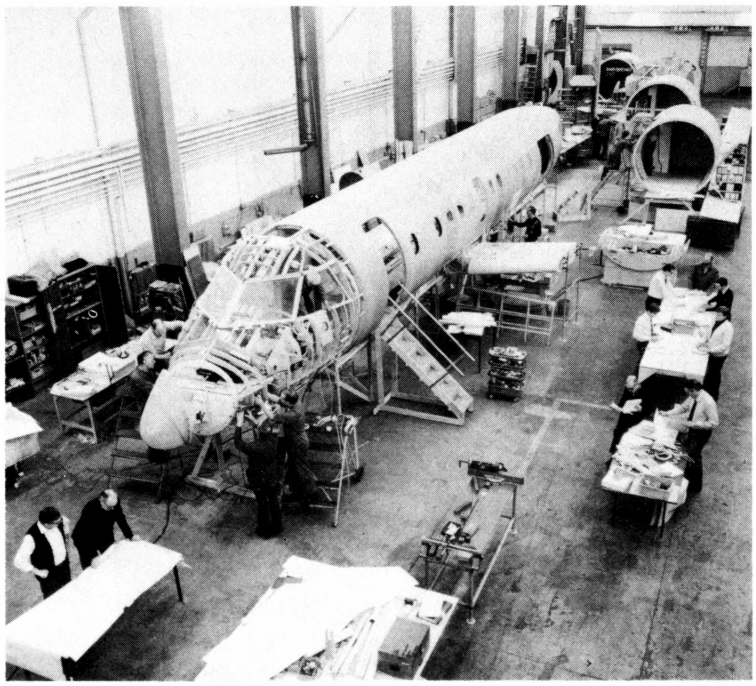
Basic certification will be carried out in Sweden by LFV—the Board of Civil Aviation—followed by joint European certification by a team representing Belgium, Denmark, Germany, Finland, France, Italy, the Netherlands, Norway, Sweden, Switzerland and the U.K. U.S. Federal Aviation Administration experts will also be involved and the 340 will be the first airliner ever to be simultaneously certificated both to U.S. airworthiness regulations FAR25 and the new joint European JAR25. It is, incidentally, also the first airliner designed jointly by European and U.S. industry.

Jacob Aardal, SAAB's Manager, Powerplant Programmes, explained the

Below: *The 1,600-s.h.p. General Electric CT7 turboprop with specially developed Dowty Rotol 126-in.-dia. propeller of composite construction*

Right: *Engineering mock-up of the SAAB-Fairchild 340*





choice of the CT7 engine. It was selected, he said, on the basis of lowest direct operating costs and fuel consumption (15–20% better than that of comparable engines), and engine maturity.

By the time it enters airline service in the 340, the CT7 will have accumulated more than one million flying hours, and the 340 engine is due to begin flight tests this August on the port wing of a Gulfstream I test-bed at the General Electric flight test centre, Edwards Air Force Base.

Ten engines plus propellers are in the final development and certification stage, and the latter is expected to be achieved in mid-1983.

Dowty Rotol in Britain have developed an advanced-technology four-blade propeller for the CT7; slow rotation and low noise levels are features of the propeller which uses composite blades with polyurethane foam core, glass epoxide skin and three-layer glass-reinforced leading-edges. The benefits are claimed as lower weight, increased take-off and climb performance, lower windmilling drag, enhanced flutter resistance and lower noise levels. The propeller design was developed in co-operation with the Aircraft Research Association at Cranfield.

The flight deck and avionics of the 340 were described by SAAB's Project Test Pilot, Eric Sjöberg. Two-pilot operation is planned and an observer's seat is incorporated; the cockpit has been designed to give a low workload and to match the latest airline standards for Category 2 operations. Sperry and Collins competed for supply of the flight guidance and autopilot system and the latter company won.

Mr. Sjöberg explained that the system requirements for the 340 demanded the same safety level as the Boeing 747; advantages over the previous digital electronic systems included better performance, improved information concentrated on CRT displays (reducing scanning time), high reliability, high redundancy due to reversionary modes, cost was less than 50% of previous systems, and future flexibility provided by the software. SAAB's experience includes digital electronic displays and system integration in military aircraft plus engineers and pilot working with Boeing in the 757/767 programme.

The standard 340 passenger cabin has thirty-four seats in eleven rows, the rear row being four seats with the others arranged in a 2 + 1 configuration, the single seats being on the left of the aisle. Executive versions of the aircraft seat 12–16 passengers.

New-technology seats, specially designed by Fairchild Burns, give more leg room in a 30-in. seat pitch, and while the appearance of the new leather seats give rise to some initial doubts, SAAB say that they have, in the mock-up, met with 100% acceptance by potential customers.

Marketing and support

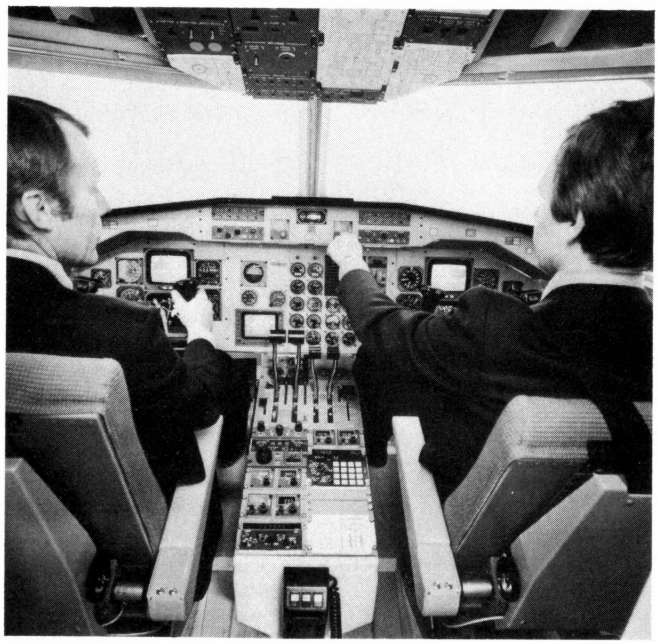
Marketing and support plans were discussed by Jan Hull, President of SAAB-Fairchild HB, the special marketing organisation established in August 1980 to cover sales in all parts of the world except for the U.S.A., Canada and Mexico. Head office is at Linköping, which also has a sales office; another is in Paris and one is planned for South America. A distributor, Stillwell Aviation of Sydney, Australia, has been appointed for Australasia and South-East Asia.

Product support, contracts administration, market services and training also come under SAAB-Fairchild HB, and Mr. Hull said that negotiations with a major airline for training had reached an advanced stage. Low fuel costs per sector and low maintenance costs plus excellent product support are the main cornerstones of the marketing approach; the target is to sell 200 aircraft—the break-even number—by the time of the first customer delivery. To date fifty-two orders and six options have been announced by SFHB, as follows: European customers, 25 plus 4 options, Middle East 5 plus 2 options, Latin America 4, Australasia/Asia 18. SAAB did not name the customers but those known are listed separately. U.S. orders totalled 53 over eighteen months, so SAAB-Fairchild's total order book has reached 105 plus 6 options.

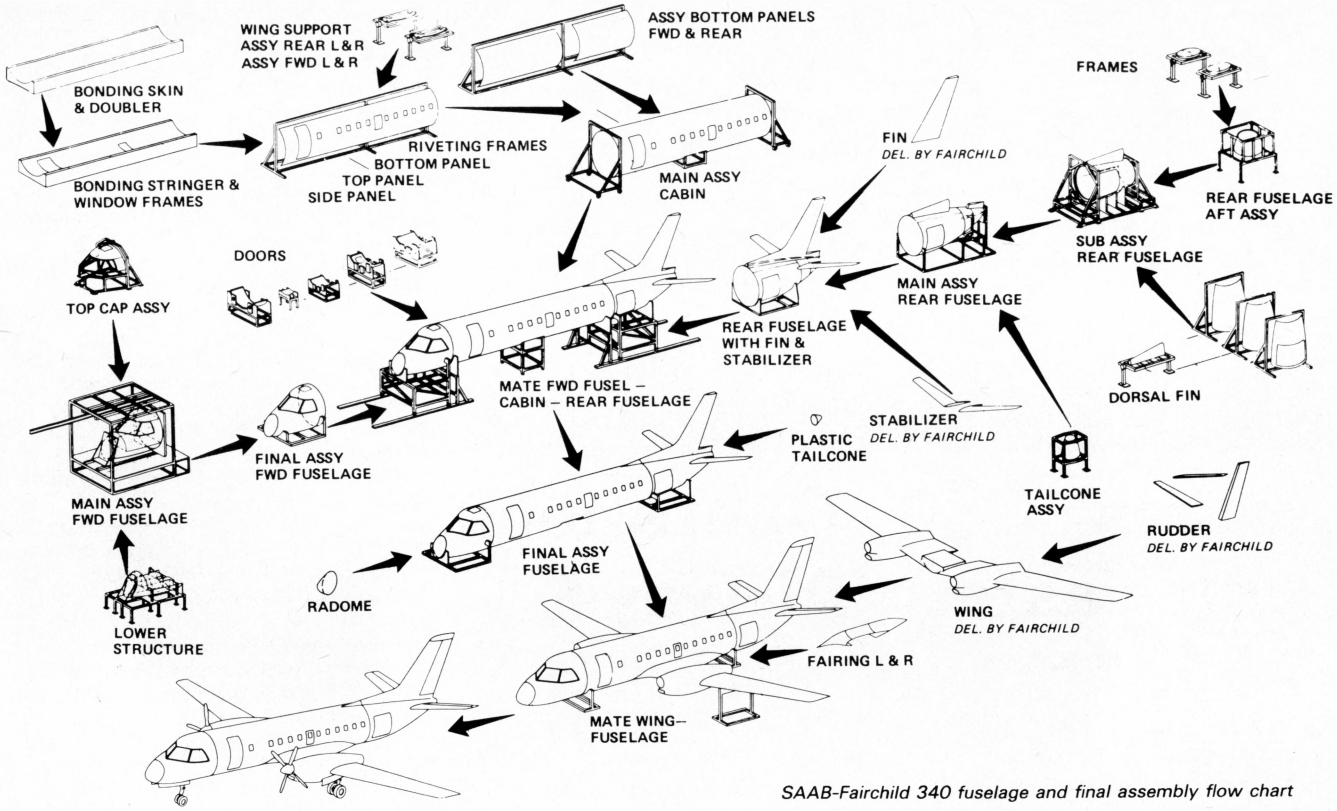
John Pike, Fairchild's 340 Programme Manager, pointed out that half of the orders required to break even had therefore been reached one year ahead of first flight and two years ahead of first delivery. All are non-refundable deposits and represent 30% of orders received by the five competitive aircraft—the SAAB-Fairchild 340, Aérospatiale/Aeritalia ATR 42, D. H. Canada Dash 8, CASA/Nurtanio

SAAB-FAIRCHILD 340 ORDER BOOK

North American orders (28 airliners + 25 corporate)	
Air Midwest	5
NW Air	4
Comair	4
Tennessee Air	2
Pocono	3
Calm Air (Canada)	2
Undisclosed	8
	28
SAAB-Fairchild HB orders	
Crossair (Switzerland)	10
Swedair (Sweden)	10
Stillwell (Australia)	18
Schreiner Air Leasing (Netherlands)	2+ 2 options
Air Service Holland	3+ 2 options
Middle East (airline)	5
Undisclosed	4
	52+ 4 options



SAAB-Fairchild 340 flight-deck mock-up (left) and passenger cabin (right)



SAAB-Fairchild 340 fuselage and final assembly flow chart

CN-235 and Embraer EMB-120 Brasilia. The 340 mock-up visited twenty-two U.S. cities in five months and was seen by 1,000 companies.

Mr. Pike said that the 340 cost would be about $4.75 million in the basic airline layout, or $5.5 million in executive configuration. He outlined the main categories of prospective customers as regional airlines, large airlines with subsidiaries handling feeder traffic, government scheduled and non-scheduled operators, non-airline operators with scheduled services such as oil-related flying, corporate users and executive charter operators.

Plans for production were outlined by Berndt Ohlsson, SAAB's Civil Aircraft Production Manager. The company began construction of a new production factory at Linköping in January 1981 and by 1st August the first sections were taken over. On 1st March 1982 the rest of the factory was commissioned, total area being 25,000 sq. metres plus another 4,000 sq. metres of office space. Investment in the new facility totalled about S.kr 200 million.

Mr. Ohlsson said that Fairchild will deliver complete wing and tail surfaces in 24-metre containers which will be shipped to Gothenburg and taken by special truck to Linköping. The first set is scheduled for delivery in August. Main fuselage assembly will be at Linköping and initial plans are for a production rate of seventy-two aircraft a year—one will be turned out every three working days (there are 220 working days per year in Sweden).

The SAAB-Fairchild 340 programme is moving ahead on schedule, so perhaps we shall yet see a genuine DC-3 replacement!

SAAB-FAIRCHILD 340 SPECIFICATION

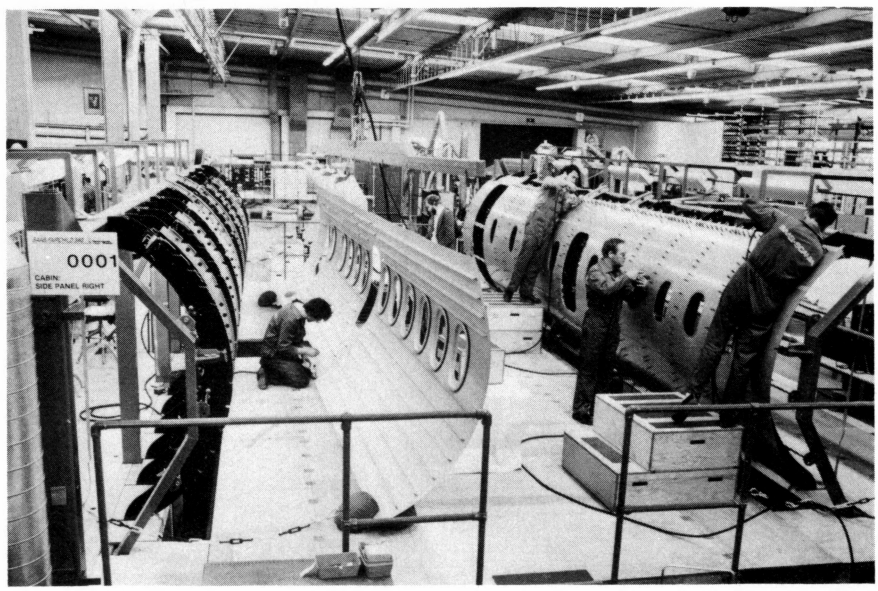
Powerplant: 2 × 1,600-s.h.p. General Electric CT7-5A turboprops (-7E for executive version) with 126-in.-dia. advanced-technology Dowty Rotol four-blade propellers

Span	70 ft. 4 in.
Length	64 ft. 8 in.
Height	22 ft. 6 in.
Cabin length	34 ft. 8 in.
Cabin width	7 ft. 1 in.
Cabin height	6 ft. 0 in.
Baggage compartment	225 cu. ft.
Cargo door	53 × 51 in.
Passenger door	27 × 63 in.
Weight empty	15,860 lb.
Max. take-off weight	26,000 lb.

Performance

Max. cruising speed at 15,000 ft.	315 m.p.h.
Economical cruise at 25,000 ft.	267 m.p.h.
Service ceiling	25,000 ft.
Stalling speed, without flaps	116 m.p.h.
approach flap setting	97 m.p.h.
landing flap setting	90 m.p.h.
Max. rate of climb at sea-level	1,900 ft./min.

Fuselage side panels of the SAAB-Fairchild 340 being fabricated at Linköping



Eastern Airways Shorts 330 G-EASI "Lady Patricia" lands back from Glasgow at Kirmington Airport, Humberside, at the close of the flight described in this article (Photo: P. H. T. Green)

Shorts 330 Operations with Eastern Airways

by J. D. R. RAWLINGS

IT IS RATHER a rare event these days to see a modern British airliner going into service on scheduled routes in the U.K., so it was with pleasurable anticipation that I travelled up to Kirmington late last year to visit Eastern Airways and see their new Shorts 330 at work. Eastern are the third British airline to operate the 330, following Loganair and Alidair, much of the type's early success being achieved in the U.S.A.

A 30-passenger turboprop commuter airliner, the Shorts 330 first appeared in 1974 when the U.S. Civil Aeronautics Board amended its Economic Regulation Part 298 to enable third-level airlines to use aircraft with a capacity of up to 30 passengers and a payload of up to 7,500 lb. Shorts had already been looking at a 26-seat design so were well on the way to producing this 30-seater, beautifully tailored to the American commuter market, well ahead of the competition, and from 1976 it has found a ready market in the New World. A detailed description of the aircraft, which was originally designated the Short SD3-30, appeared in the November 1974 issue of *Air Pictorial*.

Eastern Airways started life as a small charter company, based at Kirmington (South Humberside) Airport, flying one Piper Aztec. It gradually expanded, acquiring more Aztecs and Chieftains and operating a Hawker Siddeley HS 125 as well until 1979 when it began scheduled passenger operations between Norwich and Birmingham. In addition, it acquired three Dakotas which were operated successfully on the overnight postal services and on *ad hoc* charters for both freight and passengers.

The biggest step forward for Eastern, however, came when Air Anglia were incorporated into Air UK and this latter company dropped the scheduled, twice-daily commuter route from Humberside to London via Norwich. Eastern took over, using their own aircraft on the route. It is from these earlier aircraft that Eastern's Shorts 330, G-EASI, has taken up the task, beginning on 1st August 1981.

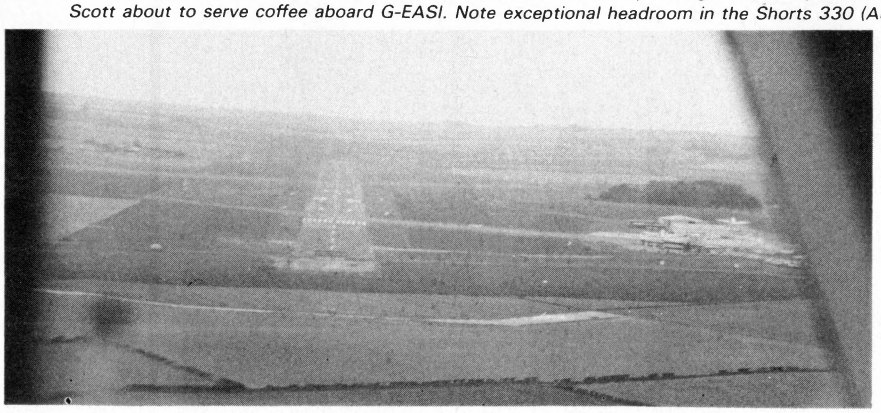
Needless to say, the purchase of a brand-new aircraft like this, involving a capital outlay in the region of £1.5 million, caused much figuring and heart-searching by the Eastern Board. The company's Chief Pilot, Captain Chris Haysom, had been over to America and studied Shorts 330 operations by two of the U.S. commuter companies, Command and Suburban, before committing Eastern Airways to the aircraft. What he saw there, coupled with his experience of U.K. commuter flying—he had previously flown with Air Anglia and Air UK—led him to believe that if the operation of the 330 was carried out on a personalised basis, it would be a success and the company has devoted itself to this end.

Thirty seats seemed to provide a sensible growth potential for the present and foreseeable routes which Eastern could expect to operate and the extremely roomy cabin, together with full flight attendant facilities, appeared to give the opportunity to provide passengers with the kind of service they would come back again to enjoy.

One of the advantages of being a small compact company is that all the employees realise that they have a significant part to play in the whole operation and are given the opportunity and responsibility to do just this. To operate the Humberside-Norwich-London and Glasgow services Eastern have five pilots and three flight attendants. The pilots comprise three captains and two first officers and they are also involved in the office with Chris Haysom in maintaining the flight records and pulling out the operating statistics so that they too can see how the 330 operation is going and can initiate methods of improving it.

Haysom considers his flight attendants are the most important persons on board the aircraft because they provide the "interface" with the custom-

Left: *Kirmington seen from G-EASI while on finals. Eastern Airways' hangar and complex are to the right.* Right: *Flight Attendant Barbara Scott about to serve coffee aboard G-EASI. Note exceptional headroom in the Shorts 330 (Author's photos)*



ers. He prefers to recruit his girls from outside the established air hostess channels so that they can be trained in Eastern's ways, rather than to have to "unlearn" the habits they may have picked up on the larger airlines. These three girls do turn and turn about, running the ticketing and reservations as well as being wholly responsible for the cabin side of their own flights, doing their own catering and generally being in charge of everything behind the flight-deck bulkhead. Thus, with personal responsibility the flight attendants get to know their passengers, a particular asset on a service which thrives largely on regular customers.

On the ticketing side the company has evolved a system which provides a guaranteed seat where money is guaranteed, and this has helped very much in building up the load factors. Ticketing has now progressed so that it intermeshes with British Airways facilities and through-booking with the major airlines becomes easily possible.

The regular operation of the Shorts 330 every weekday begins at Kirmington with an 06.50 take-off, arriving at Norwich at 07.25, a five-minute turnaround and then on to Heathrow arriving at 08.20. The aircraft leaves Heathrow again at 09.15, reaching Norwich at 10.05, leaving at 10.10 to Humberside at 10.45. It then begins the Glasgow sector leaving at 11.15, reaching Glasgow (Abbotsinch) at 12.35, returning at 15.20 to arrive at Humberside at 16.40. Twenty minutes later it begins the Norwich-Heathrow-Norwich-Humberside sectors once more, returning to Kirmington finally at 20.30.

G-EASI arrives at Humberside for a quick turn-round to Glasgow (Author's photo)

Flight in the Shorts 330

Each crew operates six sectors at a time, being relieved by the second crew who will then fly four sectors one day and two the following, and so on. By kind permission of Eastern Airways I joined G-EASI for the Glasgow return sectors at the end of September (the times were then on the summer schedule whereas those quoted above are the winter schedule) to see the 330 at work.

Capt. Dick Francis was in command and in the right-hand seat for this trip was Capt. Peter Cook. In the cabin was Flight Attendant Barbara Scott. Brakes off at 11.45 and the 330 was airborne two minutes later (the advantage of a small, well-run local airport) and climbing into a right turn on to a heading of 350 deg.

One of the advantages of this kind of flight is that it enables the crew to personalise the trip by remarking on outstanding features of the countryside on the P/A. Thus the climb-out was tailored to show the passengers the new Humberside Bridge which is still causing much controversy in the area. Having established an en route heading of 320 deg., Capt. Francis manoeuvred the 330 around one or two towering cumulus clouds for passenger comfort. The climb was maintained up to 8,500 ft. from where York Minster was visible in brilliant sunshine between the scattered clouds.

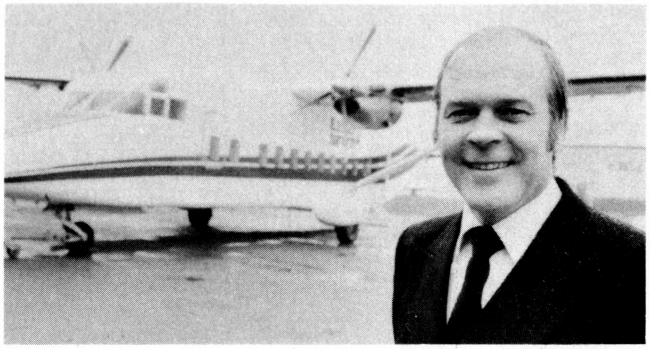
G-EASI now settled down at a cruising speed of 200 m.p.h. I.A.S.; because it is not pressurised it is limited on airline flights to 10,000 ft. ceiling but this does enable quite a percentage of the bad weather in the U.K. to be flown over. Where higher and more uncomfortable conditions are encountered the aircraft rides turbulence reasonably well, helped by the yaw damper which was an optional extra taken up by Eastern.

After a pleasant flight over the Lakes and the Border Country—suitably refreshed by Barbara en route—we flew into a vigorous cold front attacking Scotland and, one hour out from Kirmington, began a 500 ft./minute descent in IMC. We were now under radar control into Abbotsinch and after several northerly and then north-westerly heading changes increased our rate of descent, breaking cloud to see the Forth-Clyde valley being swamped with a positive deluge of rain.

The aircraft had been riding the turbulence well but as we approached the threshold the gusting wind kept Dick Francis busily occupied bringing us on to Runway 23, looking like a river in flood. Ground fine pitch brought us to a quick standstill and we taxied into Gate 11 and watched the passengers running for dry land as the run-down checks were completed. Having followed their example, we lunched at the airport and then walked out, again in pouring rain, to bring our new passengers southbound.

We taxied out at 15.31 but were

Top: *One of Eastern Airways' Piper Navajo Chieftains, G-BFDN, at Humberside*
Bottom: *The three Dakotas (G-AMPO illus.) have now been sold (Author's photos)*



Capt. Chris Haysom, Eastern Airways' Operations Director, with Shorts 330 G-NICE (ex C-GTAV) which he recently collected from Time Air of Canada—a 5,000-mile delivery flight

EASTERN AIRWAYS FLEET LIST

Reg'n.	*Type*	*c/n.*	*Previous identity/ Remarks*
G-AMPO	Douglas DC-3	26735	XE280 } Sold to
G-AMRA	Douglas DC-3	33186	LN-RTO } Air
G-AMYJ	Douglas DC-3	32715	SU-AZF } Atlantique
G-AZNY	Piper PA-23-250E Aztec	27-4668	N14058
G-BAVY	Piper PA-23-250E Aztec	27-7305017	N40218
G-BBEJ	Piper PA-31-350 Navajo Chieftain	31-7305038	N74905
G-BBEW	Piper PA-23-250E Aztec	27-7305075	N40262
G-BFDN	Piper PA-31-350 Navajo Chieftain	31-7652124	N59899
G-EASI	Shorts 330-100	SH.3070	Named "Lady Patricia"
G-MDRB	Piper PA-31-350 Navajo Chieftain	31-7752062	N63749
G-NICE	Shorts 330-100	SH.3007	C-GTAV
G-SHIP	Piper PA-23-250F Aztec	27-7654015	N62490
G-AZVS	Hawker Siddeley HS 125-3B	25132	OY-DKP. Sold

Shorts 330 . . .

held up at the runway to allow a British Caledonian Airways One-Eleven to pass us and go off first. As soon as was prudent we followed and climbed up into cloud at 1,600 ft. in considerable turbulence. As we gained height we soon needed to use the aircraft's anti-icing equipment and this was retained until we eventually broke out of the cloud 20 minutes later. On the homeward run we flew at 9,100 ft. which eventually brought us into the clear as we flew south of the frontal system.

Going north I had spent most of the time on the jump seat watching the flight deck operation but coming south gave the cabin my attention to see how Barbara went about the business of pleasing the customer. With a maximum of thirty passengers she had the opportunity, on a 1 hr. 20 min. flight, of being able to have a friendly word with everyone.

Talking to the passengers themselves, I found how much they appreciated the configuration of the 330. Most of them on this particular flight were oil-rig workers who had flown by British Airways from Aberdeen to Glasgow and then the Eastern 330 onwards. This fitted nicely with their own time schedules and some voiced the opinion that they preferred that way anyway because of the comfort of the 330 and the friendly attention of the Eastern service.

At the time of my flight the 330 had only been operating with Eastern on the routes mentioned for two months but Capt. Haysom was most encouraged at that stage. Load factors on the Norwich/London sectors were running at about 65%, well over D.O.C.'s and approaching the break-even already; the Glasgow figures needed to be worked up a little.

The Humberside area has great potential with two ports, the new motorways and the bridge now providing possible clients from north of the Humber. Eastern already have a good reputation among local business interests; in fact, there was a strong lobby from local businessmen for the company to take over the Norwich/London schedules when Air UK dropped them. Eastern also have other set contracts, both freights and passenger, which occupy the Aztecs and Chieftains, but the three Dakotas have now been sold.

Such has been the success of the Shorts 330 that Eastern have now acquired a second aircraft. Chris Haysom's comment on the 330's servicing was "superb". He said that they were operating a Trend Monitoring Scheme on the two Pratt & Whitney PT6A-45R turboprops and doing their engineering servicing in house. Shorts were very understanding in providing back-up support but there had been some difficulties to overcome in agreeing everything with the C.A.A. because the aircraft had originally been set out for American standards and FAA regulations.

Aircraft Recovery

GUEST SPEAKER at the Wednesday, 9th June meeting of the London Society of Air-Britain will be Mr. A. D. Levack, Technical Sales Executive of RFD Inflatables Ltd., who will give a lecture on "Aircraft Recovery" and the work of his company. It will be preceded by a series of films on Accidents, Safety and Survival.

The meeting will start at 7.00 p.m. in the Lecture Theatre, Holborn Central Library, 32–38 Theobald Road, London W.C.1. Visitors are welcome, admission 90p. For further details contact Charles Oman, Hon. Sec. (044-483-317).

Note that there will be no L.S.A.B. meetings in July and August.

Kit News

by J. D. R. RAWLINGS

Airfix are back

ONE OF the most cheering signs of late has been the reappearance of Airfix releases, after the long wait. The first of these is in 1/72nd scale and is the second bite Airfix have taken at the Sikorsky Super Jolly Green Giant helicopter. We reviewed this kit extensively a year ago when we received an example of the first issue which modelled a U.S.A.F. HH-53C rescue aircraft or an Israeli machine. The new release models a CH-53D of the U.S. Marine Corps aboard the U.S.S. *Guam*, or a CH-53G of the West German Army. Made to the same basic moulds, this model is of course of the same excellence as we remarked before and the transfer sheet enables realistic models to be made of either version. It retails at £2.95.

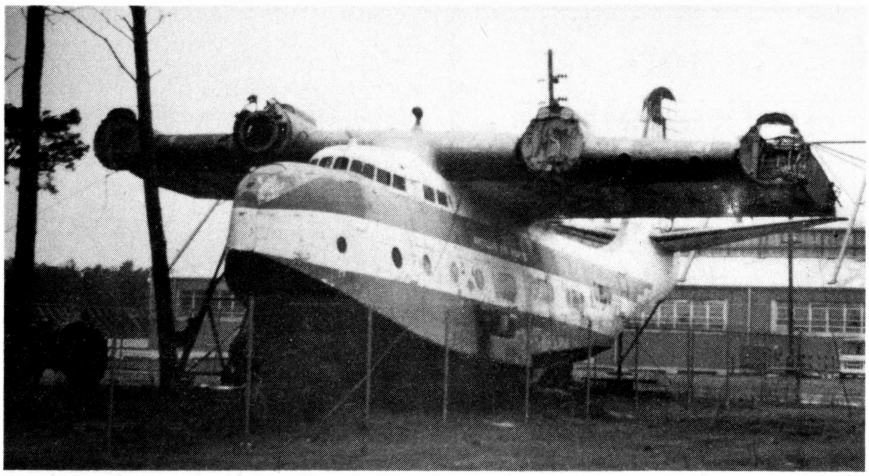
The other Airfix release is the 1/48th-scale Stuka. Eighty-five parts are provided to enable a highly detailed model to be made, either of a Ju 87B-2 or Ju 87R-1. The cockpit fitments are complete and realistic but we would like to have some guidance, on the instruction sheet, on cockpit painting. The transparency for the cockpit is so good that everything inside can be seen, so it is a must to paint the cockpit. A reflector sight and floor bomb-aiming panel are included and are good detailed touches. Assembly of the fuselage parts is uncomplicated and the wings go together well, although assembly of the flap operating mechanism is time-consuming. The final result is a most pleasing and accurate representation of this famous aircraft and is completed with a transfer sheet for a B-2 of *4 Staffel, II Gruppe, Stukageschwader 2* in North Africa 1941–42 or an R-1 of *6 Staffel, Stukageschwader 1* in Russia for the same period. As this kit is to be sold in Europe, however, the transfer sheet does not contain swastikas.

ESCI Helicopters

Further to the review (May issue) of the series of 1/48th-scale Messerschmitt-Bölkow-Blohm BO 105 helicopter kits, we have since received a fourth variant—the same kit but with yet another set of transfers, this time of German and Dutch police aircraft.

Dear Sir...

Letters and photos of general interest are welcome and will be considered for publication—but they should be kept as short as possible. Will readers requiring acknowledgment of their letters please enclose a stamped addressed envelope.



The sole remaining Vought-Sikorsky VS-44A, N41881, c/n. 4402, photographed early this year at the Pensacola Naval Air Museum, Florida, by Dr. Christopher A. L. Mahaffy

Falklands lack of AEW—and other naval air power cuts

It does not seem to be appreciated, from all that I have heard on the radio and TV, that the Royal Navy's most serious problem in the Falklands area is the lack of airborne early warning.

Your readers may recall that the AEW Gannet, which provided the Fleet with early warning against low-flying aircraft, disappeared with the demise of our last conventional aircraft-carrier, H.M.S. *Ark Royal*—which of course resulted from Mr. Denis Healey's defence cuts of 1965.

It is probable that the lack of warning of the Exocet attack on H.M.S. *Sheffield* was due to this deficiency.

Unfortunately the first of the R.A.F.'s new AEW Nimrods is not due in service until next year, and even then the range at which the Falklands operation is taking place would make the use of these land-based aircraft extremely difficult.

In short, we have now seen how our Fleet can suffer if it is deprived of *shipborne* early warning aircraft.

I was interested in some of the comments made in your leading article "Barndoor of Vulnerability" in the May issue (page 161) and think it appropriate to remind readers of certain important and relevant historical facts concerning successive cuts made in our Naval Air Power since World War I:

1918/19—The Royal Naval Air Service, then one of the greatest and most efficient air forces in the world—with some 67,000 officers and men, 126 air stations, 2,949 aeroplanes (including Britain's only long-range heavy bombers, Handley Page O/100s and O/400s) and 103 airships—was virtually disbanded and the residue amalgamated with the R.F.C. to form the R.A.F. (The shipborne element, the Fleet Air Arm, was returned to the Royal Navy in 1938).

1945/46—The Fleet Air Arm, having made an astonishing recovery in seven years, and having made a major contribution to victory in World War II, was cut to the bone as the politicians followed the advice of the nuclear bomber strategists and not that of their naval advisers.

1964/65—By this time the Fleet Air Arm had undergone another rapid reinvigoration as a result of "limited war" lessons learned in the Korean conflict. Indeed, the Royal Navy's aviation expertise had now reached a level of world-wide recognition for first-class efficiency and operational effectiveness, and the Government of 1964 recognised this by ordering the first of a new class of fleet carrier (CVA-01).

Despite this, and despite the new limited war lessons being learned by the West as a result of the Vietnam War, the Government of 1965 cancelled CVA-01 and ordered the R.N. to dispose of all aircraft-carriers except the Commando ships. Again, this was done against the advice of the Navy, but this time also against the advice of the Army.

1981/82—Yet again, against the recommendations of its naval advisers, just as the Fleet Air Arm had begun to achieve a high state of operational efficiency (albeit without adequacy in Strike, Air Defence and AEW aircraft), the politicians cut our Naval Air Power (reducing carrier strength from three ships to two). But for the present emergency we would soon have lost *Hermes* and *Invincible,* plus *Fearless* and *Intrepid* and probably the Royal Marines into the bargain.

Could we now ask the politicians to listen to naval advice, and turn a deaf ear to those who constantly and mischievously propagandise against a strong surface navy with a strong and comprehensive air arm?—*Captain G. C. Baldwin, C.B.E., D.S.C., R.N. (ret'd.), Chichester, Sussex.*

Bomber Museum appeal

We are building the Bomber Command Museum at Hendon to record this country's last and most effective Imperial fighting force and to stand as a memorial to the 119,000 members of the British Commonwealth and the United States of America who were killed during the Battle of Germany. The Bomber Command Museum Appeal Fund, a Registered Charity, has been launched to raise the £2.5 million required to build and endow this Museum.

In the course of the Appeal we hope to establish contact with all former members of Bomber Command. I am finding this a relatively straightforward job with the aircrew but I am having the greatest difficulty in reaching the men and women who made it possible for the Command to function at all, the vital ground crews. As the Museum will be testimony to everyone who served in Bomber Command, I would be very pleased to hear from any former member who would like to help us with this great enterprise.—*Group Captain W. S. O. Randle, Director of Appeals, Royal Air Force Museum, Aerodrome Road, Hendon, London NW9 5LL.*

Queen's Flight helicopters

I am sure that many readers found the feature in your April issue by J. E. Henderson on the Queen's Flight of interest and certainly one hopes that the points made are not lost on the powers that be, especially as the Royal Family is hardly in a position to speak publicly for itself.

However, while accepting the need for the economic use of resources, etc. would it be too much to ask that over the next couple of years a replacement for the Wessex HCC.4s be considered?

Although sturdy and reliable, this 25-year-old design is hardly representative of current British helicopter technology, whether from a comfort, reliability or maintenance standpoint. Does such a new helicopter exist? Well, the hard-headed commercial helicopter operators obviously think so, as several have already put up cash for the Westland 30, a helicopter which crosses the well-proven dynamics of the Lynx with a spacious new cabin that is ideal for executive travel—and what a boost for British prestige and export sales.

With such a helicopter-orientated Royal Family, and such maintenance commonality with the widely used military Lynx, a pair of Westland 30s in the Queen's Flight must surely make sense.—*Elfan ap Rees, Editor "International Helicopter", Worle, Avon.*

Aviation Bookshelf

The Royal Air Force—Today and Tomorrow
by Group Captain R. A. Mason, C.B.E., M.A. (Ian Allan, £9.95)
The author, well known within the R.A.F. for his encouraging efforts to promote writing on defence matters in the Service, since the long standing *Royal Air Force Quarterly* ceased publication in 1978, has written an interesting and accurate account of the R.A.F. for those without.

As Director of Defence Studies at the R.A.F. Staff College, G/Capt. Mason is well qualified to set the scene of the R.A.F. in the 1980s. He discusses the difficulties of equipping a force in the face of increasing defence costs, and reminds us of Lord Trenchard's dictum: "Remember that the one great thing to which you should at all times apply your thoughts and brains is the expansion of the power of material and personnel without increasing either. That way lies economy." His general introduction is followed by a review of the R.A.F. under headings of air defence, strike and attack, maritime operations, training, R.A.F. Germany, air mobility, supply and equipment, and operations worldwide.

While the R.A.F. Regiment is not covered separately its work is included integral with other facets and the work of the A. & A.E.E. and R.A.E. is briefly summarised under supply and equipment.

The book is of large format and profusely illustrated with well chosen photographs including some in colour. An appendix gives the strength of the R.A.F. by squadrons and their equipment as at 1st January 1981.—*B.R.*

The Fleet Air Arm—A Pictorial History
by Reginald Longstaff (Robert Hale, £9.95)
The author could not have known how topical this book would be, coming into print just before world events focused all eyes on the Royal Navy and its herculean move to the Falkland Islands. "Naval Air" has suffered terribly at the hands of successive British Governments and the book reflects the varying fortunes of the Fleet Air Arm in its pages, which deal very extensively with the beginnings of naval aviation. From then on it moves into World War I, dealt with in approximately thirty-eight pages. By contrast, the Fleet Air Arm in World War II fills about fifteen pages of text and is dealt with largely by describing the careers of the aircraft types involved.

Since World War II the whole development and decline and resurgence has been told in great detail, here again according to classes of aircraft or ship, so one needs to dodge back and forth to get a chronological picture. But this is a pictorial history and the book stands or falls on its illustrations. The whole gamut of naval aviation's history is well represented in the photographs, many of which appear fresh, having had limited previous exposure. All the important types of aircraft and airship are represented as well as the ships concerned and many of the people who made the Fleet Air Arm what it is appear also; action shots complement the more studied "portrait-type" views to provide an interesting selection.

The author has not, however, been served well by his publisher who cuts off noses and tails, bows and sterns and even prints one picture upside down. This reviewer also found the printing style, which merges captions in the text or even leaves captions out altogether, irritating.—*J.D.R.R.*

World Aircraft—Avro
by Michael J. Hardy (Patrick Stephens, £5.95)
First in a new Patrick Stephens series on major aircraft companies, "Avro" is very attractively produced. In a mere 90 pages the author has little scope for doing justice to the subject but nevertheless, and despite the ground having been written over so many times in the past, has produced a first-rate potted history. Eschewing the formal chapter system, he divides the book successfully into seven readable sections dealing with pioneering days, the Avro 504, the inter-war years, Cierva autogiros, war and post-war years and Avro Canada.

It has enormous pictorial content. The well-chosen illustrations (some of which are new) are seldom smaller than half page and range from Roe's first biplane at Brooklands in 1908 to the Avrocar VTOL platform built for the U.S. Army in 1959. Inexplicably none of the 142 pictures is credited either to the photographer or the supplier, an omission scarcely likely to generate much enthusiasm if they are called upon to assist with later volumes—*A.J.J.*

The Vickers Viscount and Vanguard
by Peter W. Davis (Air-Britain: members £4; non-members £6)
Foremost among several recent Air-Britain airliner monographs, this book gives comprehensive details of the development and production histories of both these famous propeller-turbine transports, its publication coinciding with a recent resurgence of Viscount activity in this country.

Enthusiasts will buy this book for its detailed history of each individual aircraft—and detailed they surely are—but in themselves they form only part of a more serious documentation, comprising technical descriptions and specifications involving 18 line drawings, backed up by an index of airline users and a cross-referenced registration index. Illustrations, 111 in number, are large and handsome but their quality only underlines, alas, modern technology's fierce determination to do less than justice to the originals—*A.J.J.*

United Kingdom and Ireland Civil Registers 1982
compiled by Malcolm P. Fillmore (Air-Britain: members £4; non-members £5)
In a normal year this would need no introduction—indeed it is annually so widely purchased that a review is scarcely necessary. But even an Air-Britain register can be improved and the new editor has, in its 18th year, not only amended and corrected what has gone before but has increased its scope with new features. These comprise new sections on the microlight register, model balloons, non-British aircraft based in or under restoration in the U.K., aircraft wearing "other than wot they should", Service aircraft flying with Historic Flights which may be confused with civil machines in spurious colours, as well as improved indexing of types and airfields.

As always, it is difficult to believe that a book of this calibre is the work of unpaid enthusiasts purely for the benefit of other enthusiasts.—*A.J.J.*

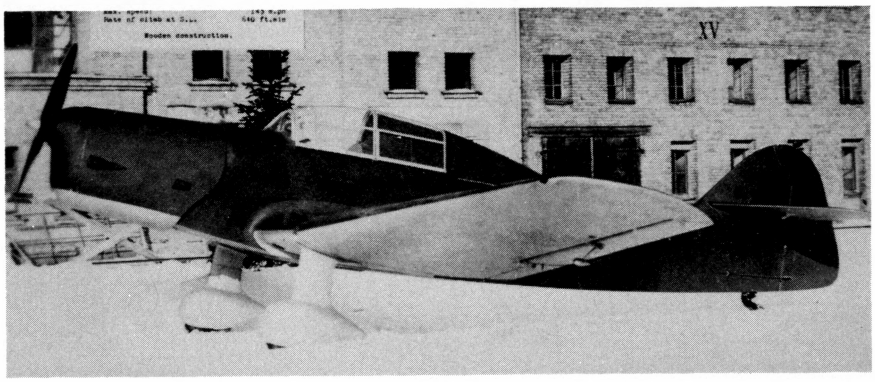
The Black Cats
by Richard C. Knott (Patrick Stephens, £8.95)
This book describes how, as a result of a desperate sortie flown by four U.S. Navy Catalinas in the developing Battle of Midway, a whole new offensive technique for night anti-shipping attacks was developed and exploited in the Pacific War. The story is told by a U.S. naval aviator and is both factually well presented and interestingly written. The text is backed up by plenty of photographs and some useful maps.—*J.D.R.R.*

Aviation Enthusiasts' Data Book
by Bruce Robertson (Patrick Stephens, £7.95)
For everybody in aviation, and those interested in it, there often comes an occasion when one wants to know some statistic or fact, or to define a technical term, and one can spend hours trying to find the answer. Bruce Robertson, author of so many useful aviation books, has set about putting within one set of covers a remarkable collection of facts and details on language, measurements, nomenclature, formations, tactics, evolutions, records, registrations, details on aero engines, armament and many other items. This is the sort of book that will be picked up time and again and should save us all hours of fruitless searching elsewhere. Well done, Bruce!—*J.D.R.R.*

(See also page 243)

Your Questions Answered . . .

. . . by AIR-BRITAIN via its over 150 Information Specialists and Aviation Research Groups. Will readers please confine their enquiries to one specific subject, and note that information cannot be supplied separately by post. Unidentified rare photos welcomed for comment.—Ed.



VEF I-17 trainer designed by Karlis Irbitis, Chief Designer of the Aircraft Branch of Valsts Electrotechniska Fabrika at Riga, Latvia, 1940

Latvia's VEF I-17

Q: *Please publish details and a picture of the VEF I-17 primary trainer produced in Latvia between the wars.—William J. Willwerth, Wilmington, Massachusetts, U.S.A.*

A: After the VEF company presented a VEF I-12 monoplane to the Latvian Aviation Regiment in February 1939, the monoplane era had finally arrived for Latvian military aviation. The Latvian Government had ordered thirty Hawker Hurricanes from England and these were intended to replace the two squadrons of Gloster Gladiators then in service.

Learning that the R.A.F. used Miles Magister monoplanes for primary training, the Latvian Ministry of Defence placed an order for six primary training monoplanes with the VEF company.

VEF, however, had no intention of copying the Magister. It was known that the Magister initially had trouble in recovering from spins. This was due to an unfavourable interaction between the horizontal and vertical tail. In consequence, the well proven tail configuration principle of the VEF I-12 was employed in the original design of the VEF I-17.

The requirement was for a closed canopy and provision for a removable hood over the pupil's seat. The cockpit canopy had to be removable so that the aircraft could also be flown with open cockpits with windshields.

The VEF I-17 was of wood and plywood construction. The two-spar plywood-covered wings consisted of a removable centre-section and removable outer panels. The wing was equipped with slotted balanced ailerons and manually operated split flaps.

The fuselage, having a rectangular cross-section and domed top, was designed for ease of production. The fuselage sides, bottom and top were assembled in special separate fixtures. There they were also equipped with all necessary fittings and hardware. The complete fuselage sub-assemblies were then assembled in a master jig.

The bottom part of the vertical fin was an integral part of the fuselage and the strut-braced single-piece tailplane was mounted on it. On top of this was the upper part of the vertical fin.

The cantilever streamlined landing gear legs were of the oleo-sprung type. The same principle was used for the lever-suspension-type tail wheel.

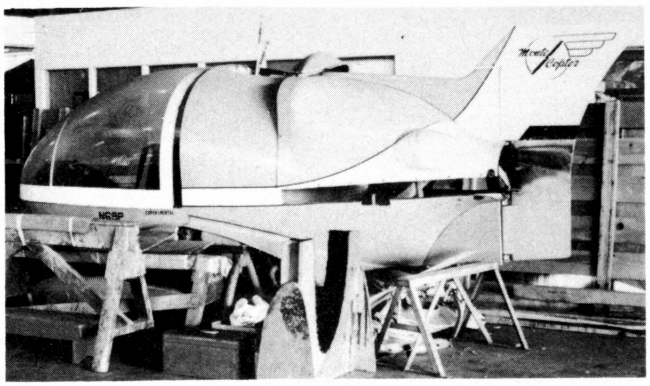
The de Havilland Gipsy Major engine was the intended powerplant but unfortunately at that time it was unobtainable. Two 130-h.p. Walter Major engines were then ordered from Czechoslovakia and four 125-h.p. Menasco C-4 engines from the U.S.A. The Walter engines were received first, but the first two Menascos were lost when the ship carrying them struck a German mine in the Baltic. Then six Menascos were delivered to Latvia via Scandinavia.

Two of the first I-17 aircraft were equipped with the Walter Major engines and four with the Menasco C-4; two Menascos remained in reserve.

When the Soviet Union's Red Army and Air Force invaded Latvia on 17th June 1940 the I-17s were not yet complete. The Soviets ordered one of the I-17s powered by a Walter engine to be finished and shipped to Moscow. So it happened that a Soviet pilot of the Red Army's Air Force's Scientific Research Institute at Moscow was the first to fly the I-17. The Soviets also ordered one of the I-17s to be re-engined with their 110-h.p. M-11 five-cylinder radial engine.

During the subsequent German occupation of Latvia, the Chief of *Luftwaffe* Training ordered VEF to finish the remaining five I-17s, removing also the Russian engine. Only then in the summer of 1941 did VEF pilots have the opportunity to make a few familiarisation flights with it. All five aircraft were later flown by German pilots to Germany. Their fate remains unknown.

Technical data: First flight 1940. Span 33.5 ft., length 26.0 ft., wing area 174.0 sq. ft.; weight empty 1,376 lb., gross weight 1,962 lb.; max. speed 144 m.p.h., cruising speed 120 m.p.h., landing speed 44 m.p.h., range 370 miles, and ceiling 19,700 ft.—*Karlis Irbitis, designer of the VEF I-17, for Air-Britain's Information Service.*



Monte-Copter Model 10 N69P photographed by A. Gobets

Monte-Copter N69P

Q: *Could you please identify the machine shown in the enclosed picture which I took at Vancouver in July 1981.—A. Gobets, Uithoorn, Holland.*

A: Monte-Copter Inc. was set up in Seattle, Washington, in 1955 and developed a small helicopter, the Model 10, which N69P appears to be.

Powered by a single Lycoming O-290-B2, it seated two and was fitted with fixed wings (intended to off-load the rotor) and a tail boom having twin fins. The rotor was two-bladed and the engine powered a centrifugal compressor.

Various developments powered by twin air compressors were proposed but it is not known if any of these came to fruition.—*Richard Currie, U.S. Aviation Research Group.*

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Register Review

by A. J. JACKSON

United Kingdom

Registration	*Type*	*c/n.*	*Previous Identity*	*Remarks*
G-BIEO	Jodel D112	1296		P. Bourne, Peterborough
G-BIZZ	Citation I	0411		Vickers Ltd., London
G-BJVK	Grob G109	6074		Soaring (Oxford) Ltd.
G-BJWX	PA-19 Super Cub	18-1984	Italian	D. E. Lamb, Boston, Lincs.
G-BJZE	Douglas DC-10-10	46973	G-GSKY	British Caledonian Airways
G-BJZK	Cessna T303	—		Northair Aviation Ltd.
G-BJZL	Cameron V-65	810		S. L. G. Williams, Ipswich
G-BJZM	Slingsby Type 67A	1996		Slingsby Engineering Ltd., Kirkbymoorside
G-BJZN	Slingsby Type 67A	1997		
G-BJZP	Thunder AX-6/56Z	—		Thunder Balloons Ltd.
G-BJZR	Colt 42A	402		C. F. Sisson, Eastwood, Notts.
G-BJZY	Bensen B-8N	21103		D. E. and M. A. Cooke, Retford, Notts.
G-BJZZ	Hispano HA.1112	235	N48157	R. Lamplough, Duxford
G-BKAA	HS125 Series 700B	257139		Aravco Ltd., Heathrow
G-BKAB	Brasov IS.28M2A	23A		Weslake Air Services Ltd., Rye, erected at Biggin Hill
G-BKAG	Boeing 727-217	21055	C-GCPA	Dan-Air Services Ltd.
G-BKAJ	HS125 Series 400B	25235	G-AYNR	McAlpine Aviation Ltd.
G-BKAL	HS748 Series 2B	1791		British Aerospace Public Ltd., Woodford
G-BKAO	Jodel D112	249	F-BFTO	J. L. Phelps, Beynes, France
G-BKAP	Boeing 737-2L9	21685	9M-MBZ	Dan-Air Services Ltd.
G-BKAR	Tomahawk 112	38-1091		C.S.E. Aviation Ltd., Kidlington
G-BKAS	Tomahawk 112	38-1075		
G-BKAT	Pitts S-1C Special	KA.001		I. M. Senior and J. G. Harper, Chessington, Surrey
G-BKAU	One-Eleven 320L	107	G-AVBW	British Caledonian Airways
G-BKAY	Commander 114	14411	SE-GSN	B. K. Aviation Ltd., Hailsham, Sussex
G-BKBA	HS125 Series 400B	25270	G-BBGU	McAlpine Aviation Ltd.
G-BKBB	Hawker Fury replica	WA.6		Hon. Patrick Lindsay, Booker
G-BKBC	Twin Otter	—	VP-FAQ	Jersey European Airways
G-BKBD	Thunder Sky Chariot	418		Thunder Balloons Ltd.
G-BKBE	AA-5A Cheetah	0836	N26952	G. W. Plowman & Sons Ltd., d/d Gander–Luton–Elstree 29/3
G-BKBH	HS125 Series 600B	256052	G-BDJE	McAlpine Aviation Ltd.
G-BKBI	Rutan Quickie Q-2	RH.01		R. H. Gibbs
G-BKBK	Stampe SV-4A	318	OO-CLR	B. O'Brien
G-BKBM	HS125 Series 600B	256039	G-BCCL	McAlpine Aviation Ltd.
G-BKBU	HS125 Series 600B	256042	G-BBRD	
G-BKCD	HS125 Series 600B	256056	G-BDOA	
G-BKCG	Boeing 727-100			Reserved for Dan-Air

The following out-of-sequence registrations have also been allotted:

G-BWHO	Thunder AX-6/56Z	417	G-BJZP	Thunder Balloons Ltd.
G-CPPC	Aztec 250	27-54103	G-BGBH	Countryside Properties Public Ltd.
G-GABD	GA-7 Cougar	0043	D-GABD	Scotia Safari Ltd., Prestwick
G-GNAT	Folland Gnat T.1		XS101	B. J. S. Grey
G-HOSK	Lance 301	32R-13132	PH-WET	Hosking Equipment Ltd.
G-IRLO	Rallye 150GT	13227	F-GBSA	Harwoods of Essex Ltd., d/d Biggin Hill 9/4, f/f in British marks 18/4
G-JAZZ	AA-5A Cheetah	0819	N26932	Fenchurch Leasing Ltd.
G-KHRE	Rallye 160ST	2931	F-GAYR	Kenlyn Enterprises Ltd., d/d Biggin Hill 2/4 in French marks, to Shoreham 9/4
G-LEZE	Rutan Longeze	10702		K. G. M. Loyal and Partners
G-MAFF	BN-2B Islander	2119	G-BJED	Pilatus Britten-Norman Ltd.
G-NICE	Shorts SD3-30	SH.3007	C-GTAV	Lease Air Ltd., operated by Eastern Airways from 5/3
G-OAPA	Pilatus PC6 Porter	815		Army Parachute Centre
G-SURE	One-Eleven 416	129	G-AVOE	Keydeck Ltd.
G-TIGB	Aerospatiale AS332L	2023	G-BJXC	Bristow Helicopters Ltd.
G-TIGC	Aerospatiale AS332L	2024	G-BJYH	
G-TIGD	Aerospatiale AS332L	2026	G-BJYI	
G-TIGE	Aerospatiale AS332L	2028	G-BJYJ	

G-TIGF to G-TGIM Aerospatiale AS332L, c/n 2030, 2032, 2034, 2036, 2042, 2044, 2050, 2045, for Bristow Helicopters Ltd.

G-TVKE	Cessna 310R	0579	G-EURO	Ewart & Co. (Studio) Ltd., Elstree
G-TVSI	Campbell Cricket	CA.340	G-AYHH	Khalid Aziz
G-XTWO	Embraer 121A Xingu	030	G-XING	C. S. E. Aviation Ltd.

Additions to the Microlight Register:

G-MBMN	Skyhook Silhouette	ADFC-01	A. D. F. Clifford, Oakham, Leics.

The long dormant Chrislea Ace G-AKVF attended the PFA Fly-In at Henstridge 18/4 (Chris Gingell); Mrs. J. O. Souch's Piper Vagabond G-ALEH (an unused 1948 registration) at Thruxton 30/3 (Paul Gingell); newly completed by H. P. Burrill, the Bjorn Andreasson BA-4, G-BIEX, is a new Sherburn resident (Colin Addison); the newest Grob 109 two-seat powered sailplane G-BJVK was also at Henstridge 18/4 (Chris Gingell); Navajo Chieftain G-MARG at Newcastle 6/4 in the colours of AirFer, a new taxi company based at Belfast Harbour (Ian MacFarlane)

G-MBMO	Hiway Skytrike 160	21V9	B. P. Phillips and Partners, Tadworth, Surrey
G-MBMP	Pavelin Mitchell Wing B.10	101	J. Pavelin, Great Wakering, Essex
G-MBMR	Ultrasports Typhoon	LM-01	L. Mills, Kingshorn, Fife
G-MBMS	Hornet Microlight	H150	C. Parkinson, Bradford, Yorks
G-MBMT	Mainair Triflyer	TRY-01	T. R. Yeomans, Rothwell, Northants.
G-MBMU	Flair Products Eurowing	E.W.38	D. H. Pattison, Swindon, Wilts.
G-MBMV	Chargus Titan 38/TS440	RNP-01	R. N. Preston, Botolph, Claydon
G-MBMW	Solar Wings Typhoon	ATRN-01	A. T. R. Nutthall, Rossendale
G-MBMX	Crindley Quicksilver MX	DJNB-01	D. M. Jagger and Partner, Woodhall Spa, Lincs.
G-MBMY	Pterodactyl Fledge	GC-01	G. Clarke, East Hanney, Oxon.
G-MBMZ	Ultralight Aviation Systems UAS Trike	O-B-01	T. D. Otho-Briggs, Mistley, Essex
G-MBNA	American Aerolights Eagle	3503	N. D. Hall, Haverfordwest
G-MBNB	Southdown Lightning L175	030	Southern Aerosports Ltd.
G-MBNC	Southdown Puma L195	343	Southern Aerosports Ltd.
G-MBND	Skyhook Skytrike 2	TR2/22	Eastern Microlight Aircraft Centre Ltd., Wisbech
G-MBNE	Southern Scorpion 2	0060	Eastern Microlight Aircraft Centre Ltd., Wisbech
G-MBNF	American Aerolights Eagle	DR-01	D. Reed, Jurby, I.O.M.
G-MBNG	Hiway Demon	25L2	C. J. Clayson, Canterbury
G-MBNL	Hiway Skytrike C.2	2145	K. V. Shail and Partner, Malvern, Worcs.
G-MBNM	American Aerolights Eagle	3392	D. W. J. Orchard, Dorset
G-MBNN	Scobie Gazelle 160	SG-001	N. A. Pitcher, Wimborne
G-MBNP	Euro-Wing CP-16	MHCB-01	M. H. C. Bishop, Bristol
G-MBNR	Flexiform Striker	DTK-01	D. T. Kaberry, Rochdale
G-MBOA	Flexiform Hilander	FS-01	A. F. Stafford, Melbourne, Derbyshire
G-MBOD	American Aerolights Eagle	3082	M. A. Ford and Partners, Maidenhead
G-MBOE	Solar Wings Typhoon	MDH-01	M. D. Hargreaves, Lytham
G-MBOF	Pakes Jackdaw	LGP-01	L. G. Pakes, Ryde, I.O.W.
G-MBOH	Microlight Mistral	008	D. L. B. Holliday, Ringwood
G-MBOI	Ultralight Flight Mirage II	—	A. R. Robinson, Sale

REGISTRATIONS CANCELLED

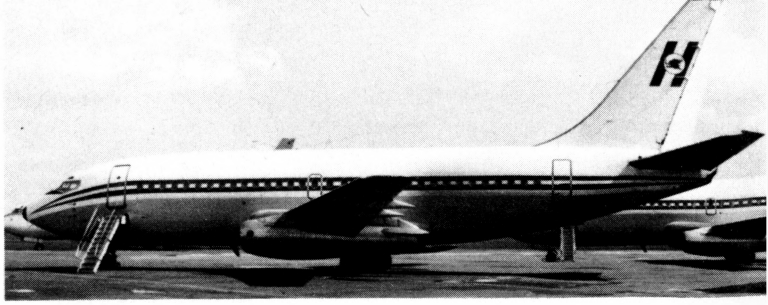
Registration	*Type*	*Identity*	*Reason*
G-ASJG	One-Eleven 201AC	011	Sold in the United States
G-AZKA	MS880B Rallye	1911	Aircraft destroyed
G-BBJH	Cessna 188 Agwagon	01277	Sold in Australia
G-BCIS	Beagle 206	010	Beyond repair in forced landing on beach in Sierra Leone 22/12/81
G-BCRF	Aztec 250E	27-5445	Sold in the United States
G-BFED	Navajo Chieftan	31-52171	Sold in the United States
G-BGVK	Cherokee 161	28-16400	Sold in Holland
G-BGYZ	Hughes 269C	1120171	Sold in Switzerland
G-BHAU	Britannia 253F	13449	To Katala Aero Transport, Zaire, ex Manston via Ostend 16/4 as 9Q-CHU
G-BHDC	Slingsby Type 65 Vega	1915	Sold in South Africa
G-BHDD	Varsity T.1	WL626	Withdrawn from use at Castle Donington
G-BHJE	Beech 58 Baron	TJ-265	Sold in the United States
G-BSVT	Bandeirante	153	Sold in the United States
G-HEAT	Bell 206B Jet Ranger	2745	Sold in the United States
G-HUSH	Hughes 269C	890826	Sold in Portugal
G-KILO	Boeing 747-236B	22306	Sold in Hong Kong
G-UPVC	Agusta 109A	7187	Sold in the United States

The following aircraft are cancelled as withdrawn from use: G-ATCI Airtourer (91); G-ATJB Airtourer (122); G-AWFE Jodel D140E (166); G-AYTC Aztec 250 (27-2725); G-AZYX M.S.893A Commodore (10640); G-BERE Thunder AX-6 (105)

PRODUCTION LINE

. . . AA-5A Cheetah N26253 d/d Gander–Luton–Elstree 9/4
. . . Aztec 250E (27-4692) G-BJXX, ex F-BTCM, f/f in British marks, Staverton 31/3
. . . Boeing 737-2T5 (22632) G-BJBJ, d/d Luton for Orion 23/3; (22638) G-BJCT, d/d Goose Bay–Luton 7/4 for Britannia; (22639) G-BJCU, on 21/4
. . . Bristol 170, ZK-EPD, believed second for Instone, delivery in June
. . . Cessna 152, N89705, d/d Reykjavik–Luton–Bovingdon 15/4
. . . Cessna 441 (0294) G-HSON, d/d Keflavik–Southend–Gamston–Yeadon 14/4, Northair Aviation Ltd. for R. Hanson Ltd. replacing Cessna 421C G-BHLM
. . . Cherokee Arrow (28R-35186) OY-POO, d/d Groningen–Southend–Stapleford 25/4 for UK registry
. . . Hughes 269C (41-0110) G-AZXI, d/d Denham–Luton–Le Touquet 15/4 as HB-XNH
. . . Islanders (2111) G-BJBD, f/f 7/9/81, to UK 2/10/81; (2112) G-BJBE, f/f 21/9, to UK 9/10, converted to BN-2T; (2113) G-BJBF, f/f 29/9, to UK 28/10; (2114) G-BJBG, f/f 18/10, to UK 4/11; (2115) G-BJBH, f/f 19/10, to UK 11/11, converted to BN-2T for Bogata; (2116) G-BJEA, f/f 30/10, to UK 19/11, converted to Defender for Surinam, to be SAF.003; (2117) G-BJEB, f/f 28/11, to UK 9/12, to be SAF.004; (2118) G-BJEC, f/f 23/11, to UK 16/12; (2119) G-BJED, f/f 25/11, to UK 17/12; (2120) G-BJEE, f/f 5/12, to UK 15/1/82; (2121) G-BJEF, f/f 15/12, to UK 21/1; (2122) G-BJEG, f/f 22/12, to UK 26/1
. . . Rearwin 8500 (462) G-AEOF flying at Biggin Hill 4/82 for issue of C. of A.
. . . Robin DR400 (1557) G-ZIPI, d/d Le Touquet–Southend–Headcorn 2/4
. . . Skyvan 3 (SH.1938) D2-EOD, ex G-BCMI, left Castle Donington for Biarritz 21/3 after rebuild
. . . TB-20 Trinidad, G-BTXX, has been delivered to Biggin Hill
. . . Wilga 35 (140542) G-BJAU, d/d Rotterdam–Southend–Booker 18/4

Wg Cdr. Ken Wallis demonstrating his two-seat WA.122 G-BGGW at Old Warden 12/4 (Air Portraits); the British Air Museum's Max Holste Broussard No. 92/G-BJGW, ex F-BMMP, at Duxford 23/4 coded GW, initials of BAM curator G. A. Warner (Paul Jackson); Gemini 3C, EI-BHJ, formerly G-ALZG, now resident at Newcastle, will commute to and from Kilbrittain, Co. Cork (Ian MacFarlane); Pitts S-2A Special G-BGSD, recently sold in France, returned briefly to Biggin and Redhill 9/4 with F-BYAJ taped on (Don Conway); King Air 90, G-BJMN, now operated by Air Continental of Luton and named "Stardust", visited Yeadon 29/4 (Colin Addison)



Left: *The hush-kit equipped One-Eleven 416EK G-CBIA in full British Island Airways colours at Newcastle on 6/4. Set up to take over the Air UK Inclusive Tour operations the airline came into being on 1st April (Ian MacFarlane).* Right: *The night closure of Birmingham resulted in three Boeing 737s using Coventry on 7/4. The aircraft which brought in Anderlecht football supporters were Trans European's OO-TEH, illustrated, and OO-TEN, both in basic Nigeria Airways livery, plus Sobelair's OO-SBS (D. G. Stretch)*

Airport Movements

by R. T. JACKSON

Inverness/Dalcross

26/3	G-BWFC	Chinook, British Airways, G-BISO 29/3; G-BIRU HS 125 27/3
29/3	G-BJOH	Turbine Islander; HB-EEW Jodel DR.1050 from Newcastle 10/4
11/4	G-BJML	Cessna 120, from Dundee; G-BKBM HS 125, McAlpines on 16/4

Glasgow

27/3	64-14863	HC-130H Hercules, U.S.A.F., also 95827, HC-130N, 67th ARRS
28/3	N422CA	CASA 212, delivery; FAP 215, Panama A.F. 7/4; N423CA 27/4
10/4	EC-BZO	Cv-990 Coronado, Spantax; OY-MBZ Boeing 737, Maersk, 14/4
19/4	PH-TVR	Boeing 737-2K2, Transavia, Britannia lease, PH-TVD 26/4
20/4	N144PM	F.27 Friendship, Pilgrim Airlines, ex Aviaco, delivery

Prestwick

1/4	N8969U	DC-8-62, Arrow Air, ex United, U.S.A.F. freight charter
3/4	OO-UPI	Metroliner; N107WA DC-10-30CF, World Airways, on 11/4
17/4	586970	VC-137B, U.S. VIP flight; N919CL DC-8, Capitol, on 21/4
22/4	7T-VCW	HS 125; VH-FIL King Air 200, c/n. BB-617, ex N6065R

Teesside

31/3	G-ARPW	Trident 1, from Heathrow, delivery to C.A.A. fire school
1/4	G-BJXJ	Boeing 737-219, Dan-Air; N33M Gulfstream 1, c/n. 106, 2/4
10/4	PH-ZBL	F.28-4000, c/n. 11093, NLM; XR441 Sea Heron C.1 on 15/4
20/4	F-BIHY	Falcon 20C, c/n. 141, from Cognac; LN-KAA Cessna 441 23/4

Newcastle

4/4	G-BELS	Twin Otter 300, Metropolitan Airways, new resident
5/4	SX-DBD	Boeing 707-384C, Olympic Airways, also 12/4; SX-DBF 19/4
13/4	80-0143	A-10A, U.S.A.F. 81st T.F.W., emergency landing, left 18/4
	03785	OV-10 Bronco, to collect A-10 pilot; EI-BHJ Gemini 3C
23/4	N770AC	Gulfstream II, c/n. 57, from Stansted; HB-VGU Learjet 35A
29/4	F-BVFJ	Nord 262A, c/n. 18, Air Limoges, from Liverpool to Reims

Leeds and Bradford

3/4	OY-DRH	Riley 65, ex G-ASSZ, F-Air, from Billund to Odense
8/4	D-CONU	Falcon 20F, c/n. 383, Dornier, still in basic Contactair livery minus titles, on a mercy flight from and to Milan
14/4	HB-VEM	Learjet 35A, c/n. 068, Swiss Air Ambulance, Zurich–Genoa
	0-18027	Beech U-21A, c/n. LM-28, U.S. Army 7th Signals Brigade

Birmingham

27/3	HZ-OCE	Merlin, from and to Cologne; N319Z Gulfstream 3 28/3
	FM0008	Falcon 20E, c/n. 268, French Air Force, FM0025 on 31/3
5/4	CN-CCH	Boeing 727-2B6, Royal Air Maroc, new service, 'RMP 12/4
6/4	OO-SBU	Boeing 707-373C, Sobelair, with Anderlecht footballers
18/4	N809LS	Gulfstream II, c/n. 47; YV434CP Learjet 35A on 20/4

East Midlands

1/4	N166SM	King Air C90, c/n. LJ-619; XM223 Devon C.2, R.A.E., 2/4
3/4	G-BDDH	F.27, Air UK, G-BLGW 4/4, both leased to British Midland
9/4	EC-DIR	DC-9-14, Spantax, from and to Palma; EC-CGZ on 16/4
16/4	OY-GKC	Citation II, c/n. 085, Lego; G-BGCS Bandeirante on 17/4
18/4	G-AIST	Spitfire 1, (AR213) and G-HUNT F.51, for display at Donington Park; OY-BTZ Navajo, Muk Air Taxi, 22/4

Norwich

14/3	G-AWWX	One-Eleven 509EW, Dan-Air, from and to Munich; G-BDAE 28/3
22/3	G-BIPP	King Air 200, Anglian Windows, delivery: OO-LFH Cessna 421
23/3	G-AXMU	One-Eleven 432, for respray in British Island livery
8/4	XS794	HS 748, XS792 23/4; VP976 Devon; F-GBDY King Air B90
16/4	OE-ILB	F.27-600, Lauda Air; PH-MBX Citation II, Martinair, 21/4

Cambridge

5/4	D-ABKK	Boeing 727-230, Condor; PH-LPS Falcon 20C, Philips, 6/4
6/4	5N-AMI	Cessna 337; OO-ROB Rockwell Commander 690B, c/n. 11409
11/4	HZ-NR2	Gulfstream 3, c/n. 304; F-BRUY Gulfstream II (43) 14/4
18/4	TU-VAF	Gulfstream 3, c/n. 303, Government of the Ivory Coast

Luton

2/4	N720X	Gulfstream 1, c/n. 73, Xerox, daily flights to Eindhoven
	N4209K	Citation I, c/n. 164, ex D-IHSV; PH-MAO DC-9, Martinair, 3/4
4/4	OE-LDU	DC-9-81, Austrian, OE-LDS on 11/4 and OE-LDW on 18/4
7/4	N890A	Gulfstream 3, c/n. 325, Alcoa; N75RP, c/n. 328, on 21/4
9/4	9H-AAJ	Jetranger, rolled out in fictitious marks as "8R-AAU"
13/4	G-BJEA	Coastguard Islander, arrived from painting by McAlpines
17/4	G-SSHH	BAe 146-100, from Reykjavik to Hatfield, first visit

Northolt

29/3	MM62127	G.222, coded 46-27, Italian A.F.; MM62105/46-82 on 30/3
30/3	N800BD	Falcon 50; 160047, C-9B, U.S. Marines; XT481 Wessex HU.5
6/4	OO-SXB	Xingu, Sabena; 50+77 Transall, West German A.F. on 7/4
8/4	64-0542	C-130E U.S.A.F.; No. 153/64-KH Noratlas, French A.F.
23/4	SE-IEY	Convair 580, Scanbee; 18058 Beech U-21A, U.S. Army

London/Heathrow

24/3	JY-AGC	TriStar 500, Alia; N93146 Boeing 720-047B, Volpar Inc.
25/3	TF-FLJ	Boeing 727-155C, Icelandair/Kabo Air; N5NE DC-9-14 27/3
29/3	EC-DNR	A300B-4, Iberia; F-BVGP, Air France 1/4, SX-BEH, Olympic, 10/4, F-BVGR 15/4 and F-BVGT 19/4, all first visits
1/4	LN-AEO	Boeing 747-283B, Nigeria Airways, leased from SAS
12/4	9M-MHI	Boeing 747-236B, Malaysian Airlines; 9M-MHJ on 16/4
14/4	N3796Q	Learjet 35A, on delivery flight to Saudi Arabia
20/4	TJ-AAM	Boeing 727-2R1, Cameroons Government, with President

Stansted

31/3	TC-JBU	Boeing 707-321B, THY, air test; D-IHLK Cessna 421
1/4	G-BDOS	Trislander, Kondair, a new freight firm based at Luton
	VH-ANI	Learjet 35A, c/n. 468, to CSE for Avionics fit, left for Athens 13/4; G-BJZE DC-10-30, British Caledonian
4/4	WV396	Hunter T.8 from Yeovilton for Heavylift Belfast spares
8/4	I-GISA	Caravelle III, c/n. 21, Altair; N100GN Gulfstream 3 10/4
13/4	5X-UWA	Bell 205, c/n. 30088 and Bell 212 5X-UWH, arrived by road, both are in a damaged condition; N2CC Boeing 727 on 15/4
29/4	G-AZZD	DC-10-10, ex Laker, now owned by Capitol, will be N916CL

Southend

31/3	N166SM	King Air C90, State of Wyoming; N206WJ Bonanza 1/4
	G-BJWP	Islander, Harvest Air, rolled out in British marks with spray gear fitted; G-BJWN, likewise, on 10/4
3/4	PH-KFH	F.27, British Midland; G-BLGW 5/4 and G-BMAS 27/4
6/4	I-CMUT	Falcon 20F, c/n. 389; EI-BJN Citation 1, c/n. 175
16/4	EI-BAM	Bell 212, Irish Helicopters, Cardiff to Groningen
23/4	59823	UH-1D Iroquois, U.S. Army; G-BKBC Twin Otter 29/4
29/4	XS597	Andover C.1, Farnborough–Kinloss; G-BKBC Twin Otter

Manston

29/3	9G-ACX	Boeing 707, Clipper International, probably ex British Airways; G-BDUR Britannia 253, Afrek, maintenance, 4/4
19/4	72+01	UH-1D Iroquois, West German Air Force; G-BCXO Bo.105D Trinity House, on lightship support; G-BFAM PA-31, 21/4

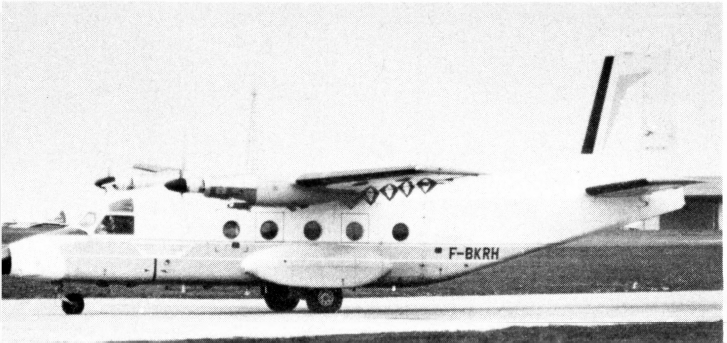
Gloucester/Cheltenham (Staverton)

30/3	F-GCGX	King Air 200, Bristol–Le Bourget; D-EBHK PA-28 4/4
8/4	G-BAKZ	Islander, to Sibson after storage, may go to Canada
9/4	N260QB	Pitts S-2S, first flight after arrival by road 12/2
21/4	C-GFJQ	Twin Otter 300M, Shoreham–Reykjavik, return from Middle East sales tour; F-GBLY Partenavia P-68B 26/4

Exeter

4/4	G-CBIA	One-Eleven 416, British Island Airways; G-AXOX 11/4
6/4	G-APML	Dakota, Air Atlantique; F-BEIG, Bretagne Air 11/4
16/4	N1621G	Aeronca; G-MFEU HS 125-600B, Massey-Ferguson on 23/4

Left: *Turbomeca's Nord 260A F-BKRH was an unusual visitor to Bristol/Lulsgate on 14/4 (Chris Gingell).* Right: *Iraqi Petroleum's Twin Otter YI-AKY, c/n. 736, was finally delivered through Shannon on 21/3 after having been delayed at the factory for a year due to the Gulf war. The aircraft sports an outsize nosewheel for rough field operations (Malcolm Nason)*



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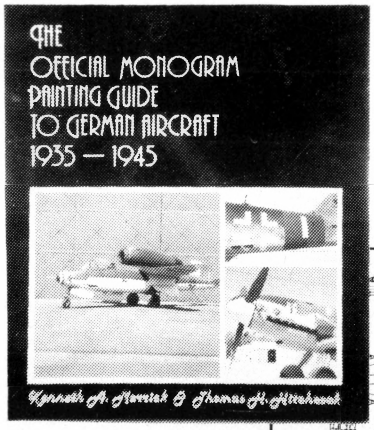

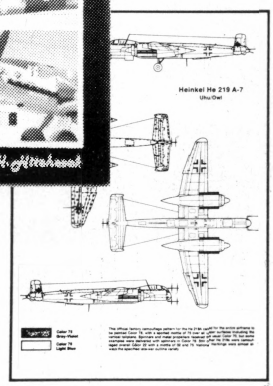

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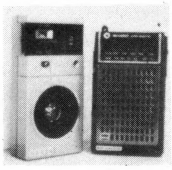

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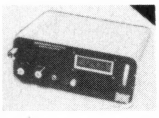

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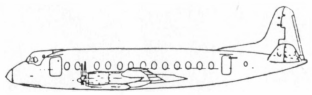

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A TIMELY BOOK—REVIEWED

The Uncertain Ally—British Defence Policy 1960–1990
by Michael Chichester and John Wilkinson (Gower, £15)

Few authors can have been so fortunate—or perhaps unfortunate—to have had their ideas put to the test so soon after publication of their work. The subject of the book is how our Armed Forces ought to be reorganised in the light of what the joint authors consider to be the proper role of Great Britain in both NATO and worldwide strategy. The test, now in progress, is the Falkland Islands.

The broad theme expounded is that, for too long, we have tended to follow a European continental strategy, with today, the greatest proportion of manpower, and a very high proportion of the defence expenditure, devoted to the British Army on the continent. They argue that in the financial circumstances which have resulted in the cuts recently announced by Defence Minister Nott, something certainly has to give; but that it should be the *land forces in Europe* rather than the Royal Navy. And that it is time that this country reverted to its traditional maritime strategy. They support this argument by saying that not only is sea power traditionally the thing we are best at, but also that the best service we can render to the NATO Alliance is to ensure the safety of the U.K. Main Base, and the sea routes which lead to it; for if these are lost, NATO is lost. It is the continental countries which are traditionally land powers; and this responsibility should lie with the continental members of the Alliance.

Additionally, they develop the argument that our responsibilities lie far more widely around the world than close to Europe and the North Atlantic; an argument since endorsed by the Argentine invasion of the Falklands and South Georgia. A secondary theme running through the book is the increased use the authors think should be made of Territorial and Auxiliary Forces.

The first 73 pages are devoted to past history, and conclude with some useful tables of statistics. Next follows a review of the position today, followed by a somewhat sketchy six pages analysing the global threat. The remaining 133 pages of text are devoted to the strategy the authors favour, and the means by which each of the three Services, and the national economy, should be adapted to meet it.

Unfortunately this latter part of the book is too frequently peppered with opinions unsupported, or only thinly supported, by reasoned argument. For example, on page 161, and again on page 175, it is stated that the Army Air Corps should assume responsibility for the operation of the R.A.F.'s Chinook, Puma, and Wessex helicopters, the only reason given being that the helicopter is an integral element in land operations. If that is so, then what about the Jaguars and Harriers of the Tactical Air Forces? There also seem to be misconceptions about the degree of training required to maintain the necessary degree of skill in flying modern front-line combat aircraft.

One of the joint authors, John Wilkinson, M.P., has in the past been a keen advocate of the revival of the Auxiliary Air Force Squadrons; but some of his proposals, such as the flat statement that the aircrew of the two Phantom squadrons to be retained to supplement the Tornado force should be flown by ex-regular auxiliaries, require much better reasoned argument to make the case than has yet been evident.

It is a pity that this timely and historically well researched book seems to be rather thin when it comes to the detail of how to put into effect the strategy proposed. Many people will be in sympathy, especially in view of recent events, with the thought that it is high time that our country should revert to its traditional maritime strategy; and that the Royal Navy should be accorded the means and the manpower which most of us have always thought that it deserved. Although the authors tactfully refrain from mentioning it, one cannot help wondering if the preponderance of military experience in high places, and lack of an effective Naval lobby, may not be something to do with it as well.—*G.J.C.P.*

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